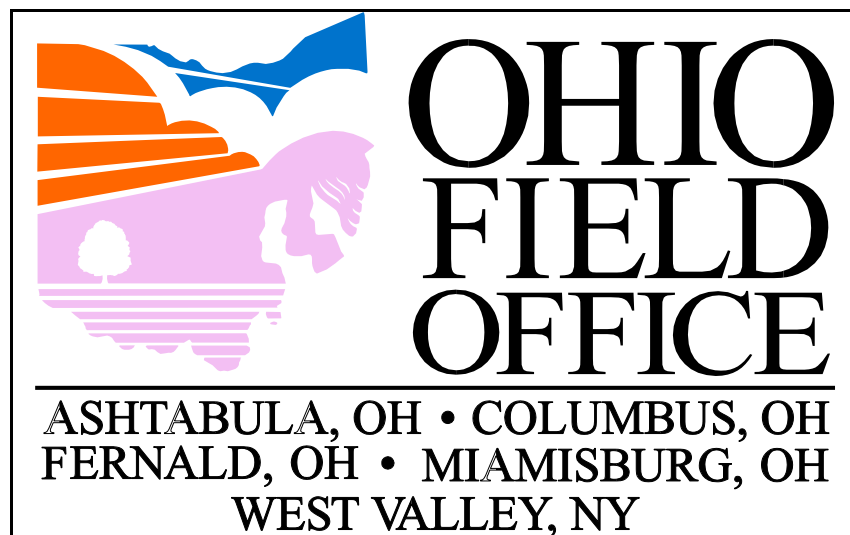


HANFORD'S LESSONS LEARNED

PROJECT PLAN

for the OHIO FIELD OFFICE



30 December 1997

Table of Contents

1.0 Work Scope	1
1.1 Purpose and Background	
1.2 Objectives	
1.3 Scope	
1.4 Deliverables	
2.0 Roles and Responsibilities	2
2.1 DOE Project Team	
2.2 DOE Project Offices	
2.3 Site Contractors	
3.0 Issues Management.....	2
3.1 Project Management Team	
3.2 Project Manager	
3.3.1 Ashtabula Executive Summary	2
3.3.2 Ashtabula Inventory and Chemical Safety Issues	
3.3.2.1 Site Hazard Assessment	
3.3.2.2 Site Vulnerability Assessment	
3.3.2.3 Staff Technical Competencies	
3.3.2.4 Lessons Learned Program	
3.3.2.5 Occurrence Reporting Program	
3.3.3 Ashtabula Notification Issues	
3.3.3.1 Categorization and Recognition	
3.3.3.2 Training	
3.3.3.3 Federal, State, Local Agency Feedback	
3.3.3.4 Emergency Readiness Assurance Plans	
3.3.4 Ashtabula Emergency Management Lessons Learned Issues	
3.3.4.1 Emergency Management Decision Making	
3.3.4.2 Protective Equipment and Staffing	
3.3.4.3 Protective Treatment of Personnel	
3.3.4.4 Hazards Information	
3.3.4.5 Independent Oversight	
3.4.1 Columbus Environmental Management Project Executive Summary	6
3.4.2 Columbus Inventory and Chemical Safety Issues	

3.4.2.1	Site Hazard Assessment	
3.4.2.2	Site Vulnerability Assessment	
3.4.2.3	Staff Technical Competencies	
3.4.2.4	Lessons Learned Program	
3.4.2.5	Occurrence Reporting Program	
3.4.3	Columbus Notification Issues	
3.4.3.1	Categorization and Recognition	
3.4.3.2	Training	
3.4.3.3	Federal, State, Local Agency Feedback	
3.4.3.4	Emergency Readiness Assurance Plans	
3.4.4	Columbus Emergency Management Lessons Learned Issues	
3.4.4.1	Emergency Management Decision Making	
3.4.4.2	Protective Equipment and Staffing	
3.4.4.3	Protective Treatment of Personnel	
3.4.4.4	Hazards Information	
3.4.4.5	Independent Oversight	
3.5.1	Fernald Environmental Management Project Executive Summary	15
3.5.2	Fernald Inventory and Chemical Safety Issues	
3.5.2.1	Site Hazard Assessment	
3.5.2.2	Site Vulnerability Assessment	
3.5.2.3	Staff Technical Competencies	
3.5.2.4	Lessons Learned Program	
3.5.2.5	Occurrence Reporting Program	
3.5.3	Fernald Notification Issues	
3.5.3.1	Categorization and Recognition	
3.5.3.2	Training	
3.5.3.3	Federal, State, Local Agency Feedback	
3.5.3.4	Emergency Readiness Assurance Plans	
3.5.4	Fernald Emergency Management Lessons Learned Issues	
3.5.4.1	Emergency Management Decision Making	
3.5.4.2	Protective Equipment and Staffing	
3.5.4.3	Protective Treatment of Personnel	
3.5.4.4	Hazards Information	
3.5.4.5	Independent Oversight	

3.6.1	Miamisburg Environmental Management Project Executive Summary.....	27
3.6.2	Miamisburg Inventory and Chemical Safety Issues	
3.6.2.1	Site Hazard Assessment	
3.6.2.2	Site Vulnerability Assessment	
3.6.2.3	Staff Technical Competencies	
3.6.2.4	Lessons Learned Program	
3.6.2.5	Occurrence Reporting Program	
3.6.3	Miamisburg Notification Issues	
3.6.3.1	Categorization and Recognition	
3.6.3.2	Training	
3.6.3.3	Federal, State, Local Agency Feedback	
3.6.3.4	Emergency Readiness Assurance Plans	
3.6.4	Miamisburg Emergency Management Lessons Learned Issues	
3.6.4.1	Emergency Management Decision Making	
3.6.4.2	Protective Equipment and Staffing	
3.6.4.3	Protective Treatment of Personnel	
3.6.4.4	Hazards Information	
3.6.4.5	Independent Oversight	
3.7.1	West Valley Demonstration Project Executive Summary	35
3.7.2	West Valley Inventory and Chemical Safety Issues	
3.7.2.1	Site Hazard Assessment	
3.7.2.2	Site Vulnerability Assessment	
3.7.2.3	Staff Technical Competencies	
3.7.2.4	Lessons Learned Program	
3.7.2.5	Occurrence Reporting Program	
3.7.3	West Valley Notification Issues	
3.7.3.1	Categorization and Recognition	
3.7.3.2	Training	
3.7.3.3	Federal, State, Local Agency Feedback	
3.7.3.4	Emergency Readiness Assurance Plans	
3.7.4	West Valley Emergency Management Lessons Learned Issues	
3.7.4.1	Emergency Management Decision Making	

- 3.7.4.2 Protective Equipment and Staffing
- 3.7.4.3 Protective Treatment of Personnel
- 3.7.4.4 Hazards Information
- 3.7.4.5 Independent Oversight

4.0 Completed Hanford Lessons Learned Taskings

5.0 Budget and Cost Data

1.0 Work Scope

1.1 Purpose and Background

By the Direction of Secretary Peña, three separate action memoranda were issued to the field to address global issues underlying the symptomatic weaknesses identified by the explosion at the Hanford Plutonium Reclamation Facility (PRF).

At the direction of the Acting Manager of the Ohio Field Office, the Office for Compliance and Support established a Project Team to address the action items identified in the three separate memoranda. With the majority of issues and taskings falling under the purview of Emergency Management, the Ohio Field Office Emergency Management Function was designated as Project Lead.

1.2 Objectives

Project Plan objectives will support the goal of the Ohio Field Office Emergency Management System:

The Ohio Field Office will retain effective emergency response capability, consequence assessment and event notification that provides for safety and protection of workers, the public and the environment.

Ohio Field Office sites shall review the chemical and nuclear inventories to accurately determine vulnerabilities to fires and explosions. Sites will further take immediate steps to mitigate these hazards through removal or reduction of inventories and as necessary, revision of emergency plans and procedures. Reporting of site activities is generally consistent with the Secretarial memoranda of August 4 and 27, 1997.

1.3 Scope

To the extent practical, existing plans, procedures, operations and past experience will be used to document and validate compliance with the intent and direction of this plan. Where gaps in procedures, plans and operations are identified by this plan, corrective actions and training will be scheduled and completed to meet the intent of the Secretarial memoranda.

1.4 Deliverables

For the purpose of this Project Plan, deliverables are defined as those items identified by the Secretaries Memoranda that require written response and or verification. Deliverables from other Secretarial Offices are further identified in the table in Section 4.

2.0 Roles and Responsibilities

2.1 Project Team

Prepare a comprehensive plan to identify, validate and report on the 14 issues and or action items designated in the Secretarial Memoranda. The plan serves as the format to report on the issues to the Secretary. The completed plan is submitted to the Secretary to comply with the December 31, 1997 Status Report. Ongoing actions that are not closed by December 31, 1998 will be scheduled for completion by March 30, 1998. A final report on the activities identified in this plan will be included in site Emergency Readiness Assurance Plans and the Ohio Field Office Consolidated Emergency Readiness Assurance Plan required for submittal in November, 1998.

2.2 DOE Project Offices

Contractor activities and information presented in this Plan have been validated by each Project Office. Project Offices also address issues applicable to the federal workforce. This includes, but is not limited to a discussion of technical competencies, training and drills and DOE oversight of contractor programs.

2.3 Site Contractors

Site contractors have conducted a comprehensive inventory of chemical and radiological hazards to ensure vulnerabilities are addressed and mitigated.

3.0 Issues Management

3.1 Project Management Team

The Team, consisting of DOE staff members from each Project site and the Office for Compliance and Support have verified data provided by the site contractor organizations. Each site has applied a level of effort commensurate with the intent of the Secretaries memoranda.

3.2 Project Manager

The Project Team Leader ensured all suspense actions related to the Hanford Lesson's Learned Project were addressed and resolved in a timely manner. In accordance with the Ohio Field Office Action Tracking System, seven Action Tracking items regarding the Hanford Explosion and lessons learned from it were assigned between September 4, 1997 and December 16, 1997. The action items are summarized in the Table in section 4 of this plan.

3.3.1 Ashtabula Environmental Management Project Executive Summary

The site is in the advanced stages of decommissioning activities. The majority of the hazardous material inventory has been stabilized and is awaiting shipment offsite. Facility staff recently completed an EPA audit of RCRA Storage Facilities, which found only minor discrepancies.

Due to the status of decommissioning, there are very few hazards that could result in an offsite release. Of the remaining offsite release scenarios documented in the site hazard assessment, RMI has implemented and has documented adequate emergency planning strategies to address these vulnerabilities.

3.3.2 Inventory and Chemical Safety Issues

3.3.2.1 Site Hazard Assessment

The site safety basis for current RMI hazardous materials operations consists of three systems and associated authorization documentation.

The Hazard Communication Program procedure controls the purchase and handling of chemicals needed at the site. The procedure calls for a review to determine the need for a specific chemical. If the chemical is purchased, it is controlled in accordance with the applicable Safe Job Procedure or Safe Work Permit.

Safe Job Procedure provides a method for review and approval of safe job procedures generated at the RMI Extrusion Plant. The procedure itself contains sections for protection against any hazardous components and associated hazards, including requiring safety contacts.

Safe Work Permit Procedure describes; 1) procedures for completing the Safe Work Permit and identifying the organization through which this procedure shall be carried out; 2) actions to be followed for safely planning and executing projects and complying with federal, state, and local regulations, and RMI procedures throughout execution of tasks; 3) requirements of the Hazardous Waste Operations and Emergency Response standard; and 4) OSHA Hazard Assessment requirements.

Hazards at the RMI facility comprise two categories: chemical and contaminated mixed waste. Off-site releases were associated with uranium-contaminated waste stored in a matrix with petroleum waste. The chance of accident initiation from the combination hazardous material and any energy source is limited to personnel involvement. This scenario is covered under emergency response procedures RMI-L-113 and RDP-SAF-100. The procedures have been supported through training and drills.

3.3.2.2 Site Vulnerability Assessment

The DOE Ashtabula Project Office utilized the services of technical specialists from Jason Associates to investigate and evaluate chemicals in each building on the site. They reviewed the

Resource Conservation and Recovery Act (RCRA) Storage areas, hazardous materials storage areas, work locations, works in progress, wastewater treatment facility, and grounds surrounding the building.

The significant hazard of concern for RCRA Storage Area I was determined to be methylene chloride. Storage conditions met the suggested recommendation of the Material Safety Data Sheets and the area is locked and contains heat sensors and fire extinguishers. The hazard evaluation for the RCRA Storage Area 2 showed that the radionuclide inventory is stored in a benign matrix consisting of floor sweepings and/or sludge. conservative calculations indicate that the Curie content levels are well below the DOE-STD-1027 threshold requirements of 4.2 Ci for Category 3 facilities.

3.3.2.3 Staff and Support Staff Technical Competencies

RMI staff technical competencies were reviewed by the Jason Associates evaluators. The review focused on competencies in the areas of emergency planning, site and programmatic events, and safety and health training. The evaluation methods included a review of training records and interviews with select personnel. All persons interviewed had participated in a site drill in the past year. In summary, participants indicated proper care and attention was given to drills and actual events.

3.3.2.4 Lessons Learned Programs

The site weekly safety briefings and monthly safety meetings are used to disseminate information about specific work groups activities. The RMI does not actively participate in a formal sitewide Lessons Learned Program. There is very limited dissemination of other site work groups and complex wide DOE Lessons Learned.

No system is in place at Ashtabula for DOE or RMI management to evaluate, properly disseminate incoming information, assure it is implemented and tracked through formal management systems.

3.3.2.5 Occurrence Reporting Program

A review of the "Reporting an Uncategorized Event and Occurrence Report Processing" Procedure Manual RMI-L-117 (Appendix F) and a review of completed reports indicates that procedures are set in place and correctly followed by employees and management at RMI. The site QA Department has utilized information from ORPS to issue a request for corrective action to determine root cause and to prevent a recurrence associated with 10 personnel contamination events which occurred in 1997. This illustrates assertive efforts to follow up on occurrences and provide new procedures or actions to avoid them in the future.

3.3.3 Ashtabula Notification Issues

3.3.3.1 Categorization and Recognition

Event categorization is proceduralized in RMI-L-117, "Reporting an Uncategorized Event and Occurrence Reporting" and is incorporated into the RMI Decommissioning Project Lesson Development Outline. A DOE-OH review of Uncategorized Event Reporting Forms also indicates that a mechanism is in place to report events that are less than an ORPS reportable. A review of RMI-L-117 indicates a need to revise and update the procedure to conform to DOE Order 232.1, the new Occurrence Reporting and Processing System Order.

The RMI actively participates in the Ashtabula County Local Emergency Planning Committee activities. Regular testing of the Mutual Aid Alerting System is made.

3.3.3.2 Training

The Ashtabula Decommissioning Project is not required to comply with DOE Order 151.1. It does however utilize an emergency plan that meets the standard of 29 CFR 1910.38. Sufficient drills are performed to ensure compliance with existing plans and procedures.

3.3.3.3 Federal, State and Local Agency Feedback

The site is very proactive in coordinating with the Ashtabula County LEPC. The site is well served by the Ashtabula Township Fire Department.

3.3.3.4 Emergency Readiness Assurance Plans (ERAP)

The site is not required to comply with DOE Order 151.1 and therefore does not complete an ERAP. Site emergency management procedures meet the requirements of 29 CFR 1910.38 and 1910.120.

3.3.4 Ashtabula Emergency Management Lessons Learned Issues

3.3.4.1 Emergency Management Decision Making

Due to the small size and number of employees at the RMIDP, emergency management protocol is conservative and essentially uses one procedure in the event of an emergency or significant event.

Review of completed ORPS, Uncategorized Event Reports and "Emergency Control Procedures: Fire, Explosion, or Serious Accident" RDP-SAF-105.104 indicates the site has the requisite experience and knowledge of emergency operations and will use a conservative approach in emergency decision making.

3.3.4.2 Protective Equipment and Staffing

Evacuation for all emergencies except incipient fire is the predetermined response by site employees. Only employees trained in the use of fire extinguishers are authorized to approach an incipient fire. Rescue operations for any hazardous material incident will be completed by the Ashtabula Township Fire Department.

The Ashtabula Township Fire Department is onsite at least annually to verify personal protective equipment requirements and to update Material Safety Data Sheets. Drills also occur with the fire department approximately once per year.

3.3.4.3 Protective Treatment of Personnel

No documentation was provided to certify the data but, the local hospital is familiar with handling radiologically contaminated patients because of the proximity of the Perry Nuclear Power Plant.

3.3.4.4 Hazards Information

The RMI Site and the County LEPC have conducted discussions on Hazard Assessments, MSDS's are provided to the local fire department and drills are conducted on an annual basis with local emergency responders.

3.3.4.5 Independent Oversight

The Ashtabula Environmental Management Project is staffed with four FTE positions. Support for oversight activities is provided by the Ohio Field Office, Office for Compliance and Support. Additionally, contract service support is utilized as the need arises as in the case of the Hanford Lessons Learned Project.

3.4.1 **Columbus Environmental Management Project Executive Summary**

Battelle Columbus Operations (BCO) maintains and conducts Research & Development under the provisions set forth in U.S. Nuclear Regulatory Commission's (NRC) License SNM-7, a special combined Type-A broad scope and special nuclear materials license. Included in the September 1994 license renewal application was the final *Decommissioning Plan for the Battelle Memorial Institute Columbus Operations* which summarizes the agreement concerning the decontamination and decommissioning among the NRC, U.S. Department of Energy (DOE) and Battelle.

NRC licensed activities are conducted at the King Avenue and West Jefferson sites involving very small quantities of special nuclear and byproduct materials. As a consequence of the decreased level of R&D by the DOE, a large quantity of both special nuclear and byproduct

materials in Battelle's possession has been packaged and disposed of in accordance with DOT and NRC regulations. At present, the West Jefferson site is in a surveillance and maintenance mode of operation.

Between FY1994 and FY1996, a major campaign was undertaken to remove all unused and unnecessary chemicals from the site. The latest chemical inventory assessment concluded that only a small quantity of chemicals remained onsite and pose no concern as long as they are handled and used under proper controls.

3.4.2 Columbus Inventory and Chemical Safety issues

3.4.2.1 Site Hazard Assessment

The actual amount of radioactive materials that Battelle possesses at either King Avenue or West Jefferson is significantly less than the license authorized quantities. The majority of radioactive material that Battelle does possess is awaiting D&D in the Hot Cells at West Jefferson.

The Battelle safety group implements a worksite analysis and hazard identification program to identify, evaluate, and control safety and health hazards. The programs include occupational safety and industrial hygiene surveys, exposure monitoring, specific hazard surveys (ie. asbestos), and safety inspections. Information from worksite analyses are integrated into the safety and health procedures and work plans for each D&D site.

During July 1997, the BCLDP performed an inventory and safety assessment of the chemicals existing at its shutdown facilities at the West Jefferson North site. A detailed report was provided to the Ohio Field Office in November. The purpose of the chemical inventory was to identify the chemicals (defined broadly) at the shutdown facilities at the West Jefferson North site, namely, buildings JN-1, JN-2, JN-3 and the Well House. In addition a chemical safety expert reviewed the chemical lists, their containment and location to determine their safety, now and as a result of long term storage.

3.4.2.2 Site Vulnerability Assessment

A major fire at the West Jefferson site represents the most likely scenario that would pose a radiological hazard to members of the general public and/or the environment. A hazard assessment for this scenario at both sites was performed by Los Alamos Technical Associates Inc. in September, 1992. The resulting report was titled *Facility Hazard Analysis and Classification Report, Battelle Columbus Laboratories*. Based upon this analysis, recommending protective actions to members of the general public would not be warranted as cited in EPA 400-R-92-001, *Manual for Protective Action Guides and Protective Actions for Nuclear Accidents*, October 1991. Site specific Safety Analysis Reports (SARs) have been evaluated and issued for the performance standards structural integrity for the JN-1 Hot Cell with considerations for fire. SARs for other buildings located at West Jefferson North Site are not required due to the small

inventory of radioactive and hazardous materials present.

The West Jefferson is currently in a shutdown, surveillance and maintenance mode. The West Jefferson site is comprised of three buildings: JN-1 which houses the hot cells; JN-2 which houses the Radioanalytical Lab; and JN-3 which houses remains of a pool type research reactor. All three buildings were constructed in mid-1950s and have exceeded their design life.

- The primary hazard at the West Jefferson site is Building JN-1 Hot Cell facility which contains approximately 6000 Curies of contamination. As noted above, a hazard analysis was performed for JN-1 in 1992 based on a credible scenario of a fire. Analysis also contained a classification study which classified the building as a radiological facility (below Category 3).
- Building JN-2 Critical Assembly facility is the least contaminated of the site buildings. Radioactive contamination is found in three contiguous laboratories, a vault, and in a drain system connecting to an underground holding tank.
- Building JN-3 Research Reactor facility has approximately 15 Curies of contamination in remaining reactor bioshield, reactor and fuel pools, various storage areas, and as sludge in piping and drains.

Buildings JN-2 and JN-3 were determined to be non-radiological facilities based on their inventory of radionuclides.

3.4.2.3 Staff Technical Competencies

The Safety and Industrial Hygiene Manager on the BCLDP project is a Certified Safety Professional. He has been on project for 5 years and is responsible for chemical and hazardous material safety.

The Senior Safety Engineer on the BCLDP has 25 year of experience in Safety and Health. He has been on the project for 5 years and is responsible for industrial safety, health and fire protection. His previous safety experience was at the Mound Facility.

The Chemical Safety expert has been with Battelle for 28 years as a Principle Research Scientist. He has been working with BCLDP for 4 years assigned to the West Jefferson North site. His primary responsibility has been documenting historical activities in JN-1 hot cells.

3.4.2.4 Lessons Learned Program

BCLDP is not governed by DOE Lessons Learned requirements under their license agreement with the NRC and through the contract with the DOE. In the area of Safety, program feedback is accomplished through Battelle's Self Assessment Program, Independent Programmatic

Assessments, DOE program reviews, DOE and Battelle facility walk-downs, and abnormal event reporting. Lessons learned from safety events and recommendations provided via review and walkdown reports are used to improve the overall program.

In Emergency Preparedness, BCLDP holds a critique or review after each exercise, drill, or real event. Evaluators, observers, and major participants submit their comments and recommendations to the Emergency Management Coordinator. From the documentation, corrective actions are recommended. Deficiencies are compiled into action items which define Areas Recommended for Improvement (ARFIs). The Emergency Management Coordinator is responsible for tracking ARFIs, as well as resolving corrective action items identified in drills and exercises.

3.4.2.5 Occurrence Reporting Program

BCLDP is exempt from DOE's ORPS reporting procedure under its contract with the DOE. In lieu of this process, they implement an Event Reporting procedure per Battelle procedure RC-AP-3.0. The procedure addresses identification and reporting of abnormal events. It covers all activities performed by or for the BCLDP and all facilities for which the BCLDP is responsible. The procedure establishes a formal process by which abnormal events are identified, categorized, and reported to BCLDP management and DOE. It meets the requirements for timely notification of emergencies and significant events of environmental, safety, and health significance. Copies of all reportable events are provided to the DOE.

3.4.3 Columbus Notification Issues

3.4.3.1 Categorization and Recognition

BCLDP emergency classification EAL's are consistent with those cited in NRC NUREG 0654, Rev.1, Appendix 1, *U.S. Nuclear Regulatory Commission Emergency Action Level Guidelines for Nuclear Power Plants*. Emergency Management Organization authorities are responsible for classifying incidents involving radioactive materials. Each postulated accident scenario is correlated to a specific EAL as described in detail in Battelle Decontamination and Decommissioning Operation Emergency Preparedness Implementing Procedure EP-IP-002, *Emergency Classification System and Emergency Action Levels*. This procedure describes emergency classification system and emergency action level criteria used to classify an event or occurrence during an actual or potential emergency condition at BCLDP and /or Battelle facilities. The BCLDP Emergency Command Center Supervisor, or his designee, is responsible for selecting appropriate EAL and ensuring that local, state, and federal governmental authorities are notified within the required time once the incident has been assigned a specific EAL classification.

BCLDP EALs are listed for:

- Spills - chemical or Hazardous Materials
- Releases - accident involving release of radioactive materials outside of a Battelle facility.
- Medical/Contaminated emergency
- Fire
- Explosion
- Aircraft Crash
- Flooding
- Tornado/High winds
- Earthquake
- Security

Initial notifications are made to local and state government organizations within fifteen (15) minutes after the emergency has been classified. The information is transmitted via telephone or facsimile. Forms are used to record information for verbal or hardcopy transmission to ensure each organization receives identical information. Notification of emergency conditions made to offsite agencies include a request confirming receipt; with no allowance for notification to be conveyed by telephone answering devices. Detailed and specific notification requirements are in EP-IP-003, *Onsite and Offsite Emergency Notification*.

In the event of large scale spills or hazardous chemical to environment, HAZMAT Response Coordinator will instruct and assist EMO in notifying National Response Center and Environmental Protection Agency. In addition, for incidents that require EAL classifications, EMO will make the appropriate notifications to the state and local Emergency Management Agencies. However, due to the small inventory of hazardous chemicals present at either site, a plan or procedure for issuing offsite protective action to members of general public is not warranted.

3.4.3.2 Training

Specialized training is provided to the following emergency response personnel: First Responders and Hazardous Waste Responders: First Responders are ANSI 3.1 Senior Health Physics technicians and/or qualified Hazardous Waste Technicians and maintain the required qualifications in order to perform their routine assignments. Training is provided in First Aid/CPR and 29CFR1910.120 OSHA 40 Hour *Hazardous Waste Operations and Emergency Response* training. In order for first responders to be qualified for search and rescue operations, training in the use of Self Contained Breathing Apparatus and requirements for entering an area with "Immediately Dangerous to Life and Health" atmosphere are provided. In addition, a team of HAZMAT Responders is trained to assess and mitigate hazardous materials incidents that could pose a health hazard to personnel or members of general public.

Emergency management training includes orientation seminars for all new employees where information is distributed relevant to actions to be taken as a first observer. Personnel involved

in emergency management activities at all levels, are qualified on all emergency preparedness implementing procedures upon assuming the responsibility, every three years, or whenever procedures are revised. For members of the emergency management organization, training is conducted at least annually that includes one or more of following exercises: (1) table top, (2) functional, and (3) full scale. Functional and full scale exercises are formally critiqued to assess the performance of personnel and facilities. Drills are used as part of training as a supervised instruction period aimed at testing, developing, and maintaining skills in a particular Emergency Management Organization position, function, center, or operation. Guiding or coaching of employees may take place during a drill as necessary.

In addition to required training, emergency management personnel participate in a minimum of one on site, full-scale, public sector integrated emergency exercise per year. These exercises are not a training function since the participants are neither guided nor coached.

A review of Battelle's training records for emergency responders indicated that all but one person were up to date on their training qualifications. That person will be qualified by December 31, 1997. At time of issue of Secretarial Notices, Battelle was in process of updating their Emergency Preparedness Program. Since final procedures had not been issued, they were able to incorporate recommendations from the Secretarial memoranda. The Emergency Management Program in its entirety was revised in mid-December, 1997. BCLDP emergency responders will have until February 1, 1998 to qualify on the new program. Qualification activities will be conducted by BCLDP training group.

3.4.3.3 Federal, State, Local Agency Feedback

Several letters of cooperative agreement are maintained current that describe terms of mutual aid between Battelle and public sector emergency management and response organizations. These organizations include

- City of Columbus, Division of Police
- Columbus Health Department
- Emergency Management Agency of Franklin County
- Emergency Management Agency of Madison County
- Emergency Management Agency of Ohio
- Jefferson Township, Madison County
- Ohio State University Medical Center

Battelle annually reports specific hazardous chemicals to the State Emergency Response Commission under provisions of Ohio's SARA Title III program. The local emergency planning committee for Franklin County is the Chemical Emergency Planning Advisory Council (CEPAC). CEPAC is an agency responsible for integrating Franklin County's response in regard to (1) emergency planning, (2) notifications, (3) community right-to-know and (4) accidental toxic chemical release and emissions reporting. In Madison County, the government

agency responsible for these tasks is the Madison County Local Emergency Planning Committee (LEPC).

Battelle is a corporate member of both Franklin and Madison County LEPCs, a member of CEPAC's hazardous analysis and training subcommittees and is a resource member of Northwest Area Strike Team (NAS-T), a county-wide HAZMAT response unit. In addition to Hazard Analysis, committee emergency management personnel also participate on a Public Information Committee. Battelle emergency management personnel also participate in county emergency exercises as players, controllers, and/or evaluators. The combination of these activities form the basis for updating community emergency response plans.

Public sector emergency management and response personnel are provided tours through Battelle facilities to maintain a current perspective of operations and facility conditions. Specifically invited to participate in tours are personnel from fire service, local law enforcement, county and state emergency management agencies, public health and medical communities.

Battelle exchanges copies of emergency plans with the county and state, and because of mutual aid agreements, integrates company emergency responders into community plans as part of the emergency exercise participation.

Sharing information and experience is accomplished through participation in debriefings and providing critique comments following community integrated emergency exercises. Battelle also team teaches a FEMA certified exercise design course with county EMA staff and shares experiences through classroom discussions.

3.4.3.4 Emergency Readiness Assurance Plans

Battelle Columbus Operations (corporate level) master plan document addressing emergency management is Battelle Columbus Operations Emergency Action Plan, Document No. EP-PP-001. Several subtier plans and procedures support BCO EAP including:

- Battelle Columbus Operations (BCO) Environmental, Safety, and Health Program, EP-PP-01, *Emergency Action Plan*, which describes Battelle's emergency management program and mechanism by which emergency resources are managed and mitigation strategies implemented.
- Battelle Columbus Operations (BCO) Environmental, Safety, and Health Program, EP-PP-02, *Contingency Plan for Hazardous Waste Accumulation Areas - King Avenue Site*, provides a written description of Battelle emergency management program which is maintained in compliance with requirements for interim status hazardous waste storage facility and less than 90-day hazardous waste accumulation areas as detailed in Ohio Administrative Code regulations.

- Battelle Columbus Operations (BCO) Environmental, Safety, and Health Program, EP-PP-03, *Contingency Plan for Hazardous Waste Accumulation Areas - West Jefferson Site*, which provides a written description of Battelle emergency management program which is in compliance with requirements for small quantity hazardous waste accumulation provision detailed in Ohio Administrative Code regulations.
- Battelle Memorial Institute Columbus Operations, BCO-EP-013, *Spill Prevention, Control, and Countermeasures Plan, King Avenue Site*, which describes the facility's preparedness to prevent discharge of oil or other petroleum products to the environment and to respond to any releases of oil or other petroleum products to the environment from King Avenue campus.
- Battelle Memorial Institute Columbus Operations, BCO-EP-014, *Spill Prevention, Control, and Countermeasures Plan, West Jefferson Site*, which describes the facility's preparedness to prevent discharge of oil or other petroleum products to the environment and to respond to any releases of oil or other petroleum products to the environment from West Jefferson campus.

BCLDP has its own emergency plan which complies with 10 CFR Part 50, Appendix E; NRC Regulatory Guide 3.67; NUREG 0654 and Supplement 1; and numerous ANSI standards. A complete listing can be found in Appendix A. It should be noted that Battelle is not governed by DOE Order 151.1 since they are an NRC regulated privately owned facility. Battelle Decontamination and Decommissioning Operations procedure DD-93-07, *BCLDP Emergency Management Plan*, is a comprehensive plan that describes the project's emergency management program and the mechanism by which emergency resources are managed and mitigation strategies are implemented. The plan applies to both King Avenue and West Jefferson campuses.

3.4.4 Columbus Emergency Management Lessons Learned Issues

3.4.4.1 Emergency Management Decision Making

Battelle Decontamination and Decommissioning Operations Procedure DD-93-07, *BCLDP Emergency Management Plan* contains the following in section 3.1:

In the absence of confirmed data, members of the BCLDP Emergency Management Organization will make conservative judgements with regard to consequence assessment of facility conditions, personnel exposures, and environmental impact.

This change was recently incorporated into Battelle's plan. Battelle's emergency responders have until February 1, 1998 to become qualified on the new plan. This activity is conducted by BCLDP training group. In addition, Battelle's emergency preparedness staff attended DOE's *Training Course on Emergency Management Decision Making*.

3.4.4.2 Protective Equipment and Staffing

Battelle Health Services provides a medical staff and limited scope facilities at the West Jefferson site. These facilities are equipped with a wide range of diagnostic and triage supplies. Radiological First Responders are trained and certified in CPR. A subset of emergency responders are designated as a “First Aid Team” and receive Blood Borne Pathogen training in compliance with 29CFR1910 regulations. A Blood Borne Pathogens First Aid Kit is stored with other emergency response supplies. The Health and Safety Nurse is responsible for providing medical assistance to injured workers and emergency personnel. In addition, the nurse will coordinate first aid activities with EMT efforts.

The Emergency Management Organization maintains eight complete sets of protective clothing available and stored in transportable Emergency Responder Kits. Additional sets of protective clothing are available as part of normal D&D operations. Water-proof protective clothing is also available as a standard issue item and included in responder kits. A supply of emergency TLDs and Pocket Ionization Chambers (PICs) are stored at the West Jefferson emergency supply area. Emergency responders are dispatched with appropriate personnel protective equipment (PPE) as well as radio communication capabilities. Quarterly audits of emergency equipment at West Jefferson are performed. A monthly check of radio equipment is also performed.

3.4.4.3 Protective Treatment of Personnel

EP-IP-006, *Medical Emergencies/Contaminated Injuries* provides procedural guidance to response personnel in the event of a medical emergency and/or a contaminated injury. When personnel are severely injured and contaminated, first aid shall always take precedence over decontamination. The West Jefferson Fire Department and Rescue Squad will furnish transportation for the injured and administer first aid en route to the hospital. Personnel with non-life threatening contaminated injuries occurring at the West Jefferson site will be transported to the OSU Medical Center Emergency Room. The West Jefferson Site maintains a designated decontamination facility for JN-1 for routine operations. A shower and sink are used to decontaminate any personnel without major injury/illness who may require such actions.

EP-IP-004 *Evacuation, Assembly, and Accountability* provides instructions regarding evacuation routes and pre-designated assembly areas for personnel in order to ensue an orderly, preplanned evacuation of Battelle facilities. In the event of unaccounted personnel, the Emergency Command Center supervisor may instruct onsite emergency responders to initiate Search and Rescue operations following guidance in EP-IP-010, *Emergency Response Teams*.

3.4.4.4 Hazards Information

As part of existing Mutual Aid Agreements, Battelle exchanges copies of emergency plans with the county and state, and integrates company emergency responders into the community plan

program as part of emergency exercise participation. Sharing information and experience is accomplished through participation in debriefings and providing critique comments following community integrated emergency exercises. Public sector emergency management and response personnel are provided tours through Battelle facilities to maintain a current perspective of operations and facility conditions. Specifically invited to participate in tours are personnel from fire service, local law enforcement, county and state emergency management agencies, public health and medical communities.

The 1993 Integrated Emergency Exercise conducted on August 8 evaluated a fire response, contaminated injured worker response, and transportation of injured worker to the hospital for treatment. The 1994 exercise conducted on September 29 also included injured workers. The September 1996 exercise tested tactical control of Emergency First Aid/Medical Services - transportation. The exercise focused on targeting the Jefferson Township Fire Department's entry into a simulated controlled area and information exchange with the Ohio State University Hospital. An integrated Emergency Exercise was not conducted in 1997 since there was an actual event, a bomb threat, which tested Battelle's emergency response capabilities as well as those of local authorities. The next exercise, which will test medical response, will be conducted in 1998.

3.4.4.5 Independent Oversight

Oversite of Battelle's programs are performed via Independent Programmatic Assessments, DOE program reviews, DOE and Battelle facility walk-downs, and abnormal event reporting. Members of DOE/CEMP also attend BCLDP weekly safety and project meetings where safety and emergency planning information is presented. As requested, personnel from DOE/OH Office for Compliance and Support will tour the site and discuss safety concerns and will provide support on programmatic reviews. Work instruction packages are provided to DOE for review and DOE personnel attend pre-job briefings prior to jobs with significant safety impacts. Facility walkdowns are documented including any problems encountered and communication of the issue to Battelle. Follow-up for closure of safety issues are documented in subsequent reports. In addition to DOE oversight, BCLDP is regulated by NRC which performs inspections of radiation protection and emergency preparedness programs. OSHA has regulatory authority for the site safety program.

3.5.1 Fernald Environmental Management Project Executive Summary

The Fluor Daniel Fernald and the DOE-FEMP have teamed together to complete a comprehensive review of site programs and processes in order to comply with the intent of the Secretarial memoranda.

FDF is responsible for the safe operation of the FEMP. Institutional safety and management program elements provide the common understanding of the work planned and conducted for accomplishing the safe, least-cost, earliest, final cleanup of the Fernald site, within the requirements of the applicable DOE orders, regulations and commitments. These elements are

documented in RM-0016, the *Fluor Daniel Fernald Management Plan*, hereafter referred to as the Manual. The Manual is the highest level management document for FDF that communicates the definition of the FEMP project, the FDF organization, the organization of work into functional areas, and the site requirements for functional areas.

The Manual formally documents FDF's vision, mission, goals, objectives, policies, principles, and requirement statements. Key to all of these items is the FEMP safety culture. The Manual states that the FEMP maintains an unequivocal commitment to safety and this belief is a basic foundation of the site culture. The site safety culture utilizes multiple programs to ensure the FEMP is maintained in a condition to enhance worker safety.

The programs include; the Safety First Initiative Team, the Independent Safety Review Committee, Pre-Operational Assessment, Testing, Surveillance, Inspection and Maintenance Programs, the Conduct of Operations Program, the Facility Safety Assessment Program, Asbestos Control Program and the Material Storage, Handling, and Related Activities Program. Discussion of each of the programs is provided below with detailed discussion provided in the FDF Hanford Lessons Learned Project Final Status Report dated December 10, 1997.

The DOE FEMP has provided an appropriate level of direct oversight to the programs listed. The DOE FEMP staff have continuously demonstrated their commitment to safety.

The Ohio Field Office recognizes the FDF and FEMP staffs for the thorough and expeditious effort that was placed on carrying out the items mandated by the Secretarial memoranda. The effort proved to be key in identifying programmatic areas of improvement to the Safe Shutdown procedure as well as minor modifications to emergency management programmatic activities.

3.5.2 Fernald Inventory and Chemical Safety Issues

3.5.2.1 Site Hazard Assessment

The initial FEMP Hazard Assessment (RM-0038) was completed March 5, 1996. The annual update was delayed this year due to the collaboration of two groups combining the Emergency Preparedness *FEMP Hazard Assessment*, and System Safety's *FEMP Hazard Survey and Preliminary Hazard Categorization*, (IM-2352). The new document, *FEMP Hazard Survey and Hazard Assessment*, (IM-2352), was completed on October 1, 1997.

At the present time FEMP is in the continuous process of scrutinizing and disposing of unneeded chemicals. Chemicals at the FEMP are inventoried annually for compliance with the SARA 312 report. After the inventory is taken, chemicals are un-officially scrutinized for need or disposal. The Lab building conducts a quarterly chemical inventory and disposes of unneeded chemicals. Safe-shutdown also identifies unneeded chemicals. Safe-shutdown cleans and readies buildings for demolition. This includes disposal of stored waste and holdup material. After unneeded chemicals are identified, Waste Minimization is contacted. Waste Minimization is responsible

for contacting vendors to recycle or dispose of the unneeded chemicals.

The site-wide inventory will again be conducted in the month of December for the annual SARA 312 Chemical Inventory report. A walk down of the site by a team from the Emergency Preparedness Staff was also conducted in the month of December. All buildings except safe shutdown buildings were looked at. This included all buildings except 2/3, 8, 9, 5, and the Pilot Plant.

Even though inventories are still being completed, the following unneeded bulk chemicals have been identified and reported to Waste Minimization.

Sulfuric acid	approx. 2600 gallons
Methanol	approx. 4874 gallons

Waste Minimization and Property Management are also working on reutilizing or disposing of approximately 500,000 lbs of other unneeded chemicals. A list of these chemicals are available upon request. Also a tank of approximately 2300 gallons of sodium sulfide/sodium hydroxide has been identified for disposal in Plant 6. Safe Shutdown activities are currently underway for Plant 6.

3.5.2.2 Site Vulnerability Assessment

FEMP's Waste Management Groups are engaged in completing a compatibility study due to the lessons learned from the white metal box over-pressurization event of May 22, 1997. The following is a status on the corrective actions developed as a result of the White Metal Box pressurization incident. The corrective actions that are discussed are only those developed to preclude recurrence of such events within the scope of the Corrective Action Review Team.

All waste generating projects and activities are reviewed to ensure that process controls and procedures are in place to prevent or evaluate packaging and/or mixing of different wastes together. During the conduct of this review, emergency planning staff have reviewed the site programs or projects as identified below.

Waste Pit Remediation Action Project (WPRAP)

This project is currently in the planning and development stage. Waste Services is assisting them in writing the Waste Management Plan for all wastes to be generated from this activity.

On-Site Disposal Facility (OSDF), Leachate Line, and Haul Road Projects

These projects are currently generating soil and are not packaging and or mixing different waste together. Should they encounter waste material other than soil it will be managed per EW-1019 "Management of At-Below Grade Impacted Material".

Advanced Waste Water Treatment Activities (AWWT)

This project is currently generating and packaging sump cake from the processing of waste waters prior to discharge. The sump cake is packaged in white metal boxes as is not co-mingled with other waste materials. This waste stream is being managed by EW-0006 "Management of Debris Above Grade".

Analytical Laboratory Activities

The Conduct of Operations (CONOPS) conducted a pre-audit assessment of the Analytical Laboratory Services Audit # I97-039. The purpose and scope of the audit was to investigate activities throughout the laboratory building. The assessment included record book stations, postings, calibration system, lockout/tagout program, radiological control and proper administration controls.

The CONOPS audit included satellite accumulation areas (SAA) for the accumulation of hazardous waste. The audit documented finding #F97-0264-Satellite Accumulation areas (SAA) are not being properly maintained. The Lab has corrected this finding.

The Laboratory manages ten SAAs at a location in Building 15B. This is a detached building that was designed for chemical and hazardous material storage. The SAAs within this area are segregated according to compatibility. Before a daily pick-up of hazardous waste is made, a waste container card is filled out by the lab analyst verifying the contents of each container. All of the collection containers are clearly marked as to contents. (These activity controls are covered under procedure ALS - 7508, "Preparation of Radiological Lab Liquid Wastes for Disposal"). As an operator aid, each individual Lab SAA that handles liquids has a specific funnel that is clearly marked with the container's contents. This serves as another visual operations check that is made prior to making an addition to a container.

Maintenance and Garage Activities

The maintenance department has two Satellite Accumulation Areas (SAAs) located in Building 12 for the accumulation of paint thinners & paint residues and paint thinner rags. There are procedures and controls in place to prevent the packaging and/or mixing of different wastes together. In addition, they are managed under Material Evaluation Forms (MEF) numbers 1411 and 396.

Mixed Waste Disposition Projects

Liquid Bulking and Organic Extraction Projects

Prior to blending MWP uses various methods for evaluating and handling to assure a safe condition. These methods include but are not limited to ; Material Evaluation Forms (MEF),

Chemical Characteristics of the wastes, Review of MSDSs, Compatibility Testing, Neutralization Prior to Bulking, Visual Inspections, Chemical Analysis after bulking, Atmosphere Control on tank and grounding of the tank.

Liquid Bulking Project

At present and in future endeavors, Waste Characterization has played the integral role with regards to issues concerning accepting waste into the project. WC evaluates each waste stream by MEF, and in a number of cases by individual populations within an MEF, to ascertain the acceptability and compatibility of waste into the current batch.

At the initiation of this project batch groups of waste were identified based on material type and characterization determination. Prior to identifying final batches to be consolidated, the waste is sampled and consolidated in bench scale quantities. These compatibility tests are conducted according ASTM Method 5058, Standard Test Method A.

Thorium Stabilization Project

The Thorium Stabilization Project blends materials with stabilization media. The same type of controls that are used in the liquid bulking and organic extraction projects are used (as appropriate) with additional controls. These additional controls are; Process Control Program for product control, Treatability Study Data and Research NLO procedures.

The thorium stabilization project has developed procedure number 64-C-109, "Thorium Legacy Waste Project Low-Level Thorium Waste Operations", effective October 1, 1997 for the safe operations of low-level thorium waste for shipment.

Pyrophoric Material has additional controls. These controls are: Volume control and elimination of water in the process (mineral oil is used) and material is layered to prevent friction.

The other process technologies use the same type of controls and evaluations. All are reviewed and approved by State and US agency officials.

Low Level Waste

The Low Level Waste group has completed approximately 95% of their compatibility study. The compatibility study is expected to be completed by December 30, 1997. The Low Level Waste group developed a criteria for evaluation of non-RCRA hazards associated with legacy residues based on 49CFR173 Subpart C, "Definition, Classification, and Packaging for class 1," and Subpart D," Definition, Classification, Packaging Group Assignments and Exceptions for Hazardous Materials, Other than Class 1 and Class 7." This protocol evaluates the materials for DOT hazards such as pyrophoricity, corrosivity, toxicity, explosiveness, dangerous when wet, etc. Each material type and source code combination associated with the legacy residue

inventory is reviewed and assigned a Compatibility Classification (red, yellow or green code) by a team of former senior FEMP Operations Personnel. A red Material Evaluation Form (MEF) must only be packaged with other containers within the same MEF. A yellow MEF requires special approval to package with other MEFs. Unless special approval is provided by Low Level Waste Validation, the waste can only be packaged with other wastes within the same MEF. A green MEF is a MEF that the team has determined to be inert with any other green wastes. This waste is acceptable for co-packaging.

Inactive Storage Tanks

Most of the inactive storage tanks on site have gone through the Safe Shutdown process or are in the process of going through Safe Shutdown. However, a concern was brought to the attention of Safe Shutdown concerning residual UNH in tanks at Plant 2/3. Plant 2/3 had a large volume of material, mostly aqueous solution (i.e. uranyl nitrate in dilute nitric acid). In the Plant Hazard Survey, October 9, 1992, it states that Nitrates in general and UNH specifically are potentially explosive under some circumstances. The UNH tanks had been drained, but there was a possibility of residual UNH left in the bottom of the tanks or piping. Safe Shutdown has conducted nondestructive analysis on all twelve tanks located in Plant 2/3. Three tanks had indications of residual uranium. Two UNH tanks and one Sump Water tank. Safe Shutdown has drained the residual UNH from the two UNH tanks. Investigations have identified a semi solid residue in the bottom of Sump Water Tank F1-25A. Further analysis of the material indicates it is less than 6% uranium by weight. It is important to note that Plant 2/3 is now in the process of Safe Shutdown. The current project schedule has programmed this material for removal in the 3rd quarter of FY1998. DOE Safety and Assessment and Project Management personnel are aware of this residual material and are tracking the progress to closure in accordance with the Project Management schedule.

Satellite Accumulation Area Administrative Controls

Currently, the only area maintaining SAAs with incompatible materials is the FEMP Analytical Lab. All other SAA waste streams being generated are compatible with one another, and in the unlikely event that an accidental mixing occurred between materials, no reactive occurrence would result. However, as an administrative control, any additions to an SAA container must be completed by, or under the presence, and supervision, of a trained operator. All waste additions are recorded on a hazardous waste disposal record specific to each SAA. This disposal record, as well as other waste identification documentation, is kept attached to each container for review, prior to making an addition.

3.5.2.3 Staff and Support Staff Technical Competencies

The FEMP site looked at the competency and qualifications of project engineers, and emergency support personnel on a project basis which deal with hazardous material. Support personnel will include EOC Staff, Emergency Duty Officers (EDO), Assistant Emergency Duty Officers

(AEDO), Emergency Response Team (ERT), Radiological and Industrial Hygiene technicians, Medical, and Security. Emphasis will be on site and project hazard communications.

The main projects which will be observed include the following:

- 1) Silo Projects
- 2) Safe Shutdown Project
- 3) Waste Pits Disposition Project
- 4) Organic Extraction Project
- 5) Liquid Bulking Project
- 6) Legacy Thorium Project
- 7) Low Level Waste Project
- 8) Nuclear Materials Disposition Project

Methodology

Resumes and Training Records were obtained on each selected Project Manager and Technical Staff. This material was then reviewed and a spreadsheet was generated. Not all training taken was included, however, sufficient information is provided to support conclusions. Also, a review of the training records for Fire Protection Inspectors and Emergency Response Personnel was conducted.

Conclusions

Project Managers and Project Technical Staff do not fit neatly into the Order description. Rather than ensuring that a plant or facility is safely and reliably operated they ensure that a project or series of projects are safely and reliably operated and that Technical project support functions are accomplished.

Project Managers and Technical Staff exceed the DOE Order 5480.20A, "Education and Experience", requirements for managers and Technical Staff. Training for Project Managers and Technical Support Staff is individualized and oriented toward ensuring the project is safely and reliably operated and that supporting operational and administrative activities are properly controlled.

The Assistant Emergency Duty Officers selected were all trained for the position and have extensive facility experience. In addition, as a new project facility is created such as the AWWT or VITT plant, training is provided. Training is also provided for a new activity that presents or has the potential to present unique hazards such as the Thorium Overpack Project.

The fire protection/emergency response team members are all NFPA certified firefighters and are Hazmat technician level trained. They are trained based on facility based hazards and additional training is provided in much the same way AEDO training is updated.

The Emergency Duty Officers and Emergency Operations Center (EOC) Staff are selected by the Manager of Emergency Preparedness with concurrence from the Manager of Emergency Services. The Emergency Duty Officers are selected managers based on experience, site knowledge, and are trained annually by the Emergency Preparedness Staff. EOC staff members are categorized into the following groups : Policy, Operational, Technical, and Administrative & Support. The selection of EOC staff members are dependent upon which group they are categorized in and their full-time position with the company. Each member is trained annually for their position in the EOC by Emergency Preparedness Staff.

Presently, it is noted that Security and Medical are not trained to all project hazards. A project based Hazard Communication briefing will be scheduled for March 1998.

3.5.2.4 Lessons Learned Programs

The FDF Lessons Learned Program is well staffed and well run. Incoming information is properly summarized and disseminated effectively throughout the site to both contractor and DOE personnel. Outgoing information about site activities is reported accurately and concisely and utilized in complex wide lessons learned activities.

3.5.2.5 Occurrence Reporting Program

The FDF Occurrence Reporting Program is also well staffed and well run. Occurrence determination and classification is a routine function of FDF response actions to unexpected events. The DOE reviews the daily Assistant Emergency Duty Officer Log to ensure proper categorization and classification. ORPS are disseminated timely to both the formal ORPS system as well as the internal plant computer network. The ORPS reports are generally concise and provide factual accuracy. Jargon and acronyms are not used to identify site specific activities.

3.5.2.6 Contractor Oversight Programs

DOE FEMP Project Management maintains a comprehensive project management oversight program. An example of this is the Safe Shutdown Process. Implementation plans for safe shutdown are complete for all facilities on the FEMP. The plans, completed in 18 parts, address hazards and mitigation. Process knowledge, existing safety analyses, Basis for Interim Operation data, and results of sampling are used to establish detailed task orders for completion of safe shutdown activities. DOE Facility Representatives maintain surveillance schedules to ensure compliance with task Order Procedures. DOE Safety and Assessment personnel are used in the hazard analysis stage of the operation as well as during the conduct of surveillances and assessments. DOE Project Management personnel coordinate these activities and the Safety and Assessment personnel may also work independent of Project Management.

DOE FEMP provides oversight on day to day contractor safety and health management. The

DOE FEMP Safety and Assessment Team observe and track performance in key areas such as construction safety, health physics, general safety, medical surveillance, industrial hygiene, conduct of operations, and emergency management. DOE FEMP also participates on the FDF Facility Safety Assessment Program which inspects every facility on the site at least twice annually.

3.5.3 Fernald Notification Issues

Off-Site notification is regularly drilled and exercised by the site. The Fernald site has a mature and robust Emergency Management Program. The site has been extremely proactive with local and State emergency response agencies for several years. The unique Mutual Aid agreements that exist between the site and the local communities have fostered an atmosphere of trust and confidence.

Additionally, the site emergency response procedures for unusual events have regularly tested the internal notification systems of the Emergency Response Organization. As indicated by the White Metal Box Overpressurization Incident of May 1997, the site is capable of activating and staffing the ERO during non-duty hours in less than one hour. The response time for unexpected events during duty hours is just minutes.

3.5.3.1 Categorization and Recognition

Event Notification and Occurrence Reporting is proceduralized in Document No: EM-0010, dated October 15, 1997. This procedure is consistently followed for event reporting and regularly updated as issues and corrective actions are identified.

Assistant Emergency Duty Officers (AEDO's) are the initial classification official at the site. Assistance can be called upon from on site resources or the FDF Emergency Duty Officer.

3.5.3.2 Training

Emergency Duty Officer event categorization, notification and reporting training is completed annually for EDOs, AEDOs, and Emergency Chiefs. This years training cycle was completed November 1997. Next years training cycle will start in February 1998, however, additional training from HQ was conducted on October 23, 1997 for EDO's, AEDO's, Emergency Chiefs, and the Policy Group. This training consisted of the Emergency Management Decision Making block of instruction sponsored by the Office of Emergency Management, NN-60.

3.5.3.3 Federal, State and Local Agency Feedback

The FEMP has entered into mutual aid agreements with local fire and life squads and hospitals. These offsite agencies provide reinforcement to FEMP emergency responders and extended medical facilities.

Three area fire departments and the FEMP have the following equipment available for emergency response.

Available Resources	Crosby Township	Ross Township	Colerain Township	FEMP
Pumper	2	2	6	3
Tanker	2	2	2	1
Ambulance	2	2	4	2
Rescue		1	1	1
Other	Paramedic Service	Helicopter Landing Area	Ladder truck 2Paramedic Units	HazMat Unit Air Unit

Following is a list of Hospitals which FEMP has mutual aid agreements:

The University of Cincinnati Hospital, which has two Air-Care Helicopters.

Mercy Hospital, located in Hamilton, Ohio.

Providence Base Hospital, located in Cincinnati, Ohio.

The Franciscan Medical Center, located in Harrison, Ohio.

Only the **University of Cincinnati Hospital** is equipped to handle contaminated personnel. Dependent upon injuries, the FEMP medical staff will de-contaminate personnel in their decon facility prior to transport. Procedures are in place for Radiological Safety personnel to travel with the injured person to the hospital to control the spread of contamination. Also, contamination forms and MSDS's are sent with the patient or faxed to the Hospital explaining contamination areas and the contaminate.

Even though procedures are in place for the transport of contaminated patients, this has not been drilled in the past few years. This type of drill is dependent upon local Hospital demand.

The FEMP enhances their relationships with the public emergency response organizations through an active Envoy program and the Cooperative Planning and Training (CPT) Meetings. CPT is a group which meets every other month to talk about emergency response issues and to develop drills and exercises which will benefit each organization. The CPT group consists of DOE personnel, FEMP Emergency Employees, State EPA, State EMA, Hamilton County EMA, Butler County EMA, County township trustees, Neighboring Chemical Companies, and local fire and ambulance crews and local law enforcement.

The Hanford Lessons Learned Summary was sent to CPT members prior to the November 19, 1997 meeting and was presented at the CPT meeting (November 19, 1997). Notification issues

were discussed, however, no concerns for notification issues were voiced by those local CPT members present at the meeting.

In February 1994, DOE and Fluor Daniel Fernald initiated the Fernald Envoy Program to promote one-on-one communication between FEMP personnel and representatives of local community groups interested in FEMP-related cleanup activities, issues and progress. DOE and Fluor Daniel Fernald employees serve as envoys to various stakeholder groups, including: FEMP neighbors, local business leaders, school officials, environmental groups, regulatory agencies, and elected officials.

The program is designed to facilitate two-way communication and improve the FEMP decision-making process. FEMP envoys build closer relationships with community groups interested in FEMP-related activities and issues by providing them with detailed information and listening to their questions and concerns.

Currently, the program has 29 active envoys, who were selected, based on their interests, leadership qualities, and willingness to spend personal time communicating to their stakeholder groups. Encompassing 33 community groups, the Fernald Envoy Program serves the largest, most diverse stakeholder base in the entire DOE complex. The Fernald Envoy Program has been recognized nationally as an innovative means of facilitating two-way communication between decision-makers and stakeholders.

3.5.3.4 Emergency Readiness Assurance Plans (ERAP)

The 1997 Fernald ERAP was submitted in accordance DOE Order 151.1. The site is in the maintenance stage of ERAP preparation and submittal. ERAP's are reviewed by the DOE FEMP and forwarded for review and approval by the Ohio Field Office Manager. Over the last several years, the FEMP ERAP has been approved with only minor editorial comments presented by the Field Office. Headquarters review of the Fernald ERAP has also been favorable over the same period.

3.5.4 Fernald Emergency Management Lessons Learned Issues

3.5.4.1 Emergency Management Decision Making

Emergency Management Decision Making Training was conducted on October 23, 1997 from DOE-HQ (NN-60), for EDO's, AEDO's, Emergency Chiefs, and the Policy Group. DOE FEMP Emergency Duty Officers also attended this training. DOE EDO's are senior level staff who have completed the required FDF EDO training. The Training was also made available to members of the Local Emergency Planning Committee in order that they might familiarize themselves with the decision making process of the site.

In addition, the Fernald site has been extremely proactive in utilizing the Site Emergency

Response Organization to evaluate unexpected events. This process of using the ERO to determine the consequences of the event allows quick access to the necessary resources available from the site as well as from other emergency response resources.

3.5.4.2 Protective Equipment and Staffing

The staging and readiness of personnel protective equipment and field monitoring equipment have been tested in recent drills. The last drill held on September 19, 1997, discovered a deficiency in the field monitoring equipment in the event of a criticality. This was noted in the drill critique and is being tracked as a corrective action.

Monitoring team equipment kits, are inventoried and checked on a regular basis per procedure. Emergency kits are inventoried and replenished then sealed after every response use. The Emergency monitoring kit seal is checked monthly and a thorough inventory is done quarterly.

Past drills have also shown a deficiency in the ability of radiological monitoring teams to work through the incident command system. Incident command and emergency response has been added to RCT re-qualification training. This training includes: table top exercises using the incident command system, and drills using credible scenarios which include site hazards. Also, Fire Inspectors and IH are planning to participate in these weekly drills when available.

Random inspections of emergency personnel protective equipment and emergency monitoring kits were performed by DOE-FEMP. No deficiencies were noted during these spot checks.

3.5.4.3 Protective Treatment of Personnel

Medical care and continued monitoring of affected personnel following an incident are covered in the following procedures.

MD-MSS-004
RS-DOS-007

Drills and exercises have been conducted to confirm procedure implementation for notifications and protection of workers.

3.5.4.4 Hazards Information

Procedures are in place for Radiological Safety personnel to travel with the injured person to the hospital to control the spread of contamination. Also, contamination forms and MSDS s are sent with the patient or faxed to the Hospital explaining contamination areas and the contaminate. Form FS-F-2701 (Information to be Given to Emergency Room Head Nurse) has been updated to include chemical exposures.

Even though procedures are in place for the transport of contaminated patients, this has not been drilled in the past few years. This type of drill is dependent upon local Hospital demand. During the November 19, 1997 CPT meeting, a drill or tour between the Hospital and the site Radiological Safety personnel was discussed with Hamilton County EMA. Hamilton County EMA agreed to discuss the possibility of running a drill or a tour with University Hospital.

3.5.4.5 Independent Oversight

The Fernald site maintains a proactive oversight program. The DOE FEMP Safety and Assessment Team utilizes a software database called the DOE Non-Conformance Tracking Database to track, trend and record performance in key areas. Since activation of the database, 250 Field Reports, 2 Audit Reports, 8 Conduct of Operations Reports and 34 Assessments Reports have been entered into the system. The system is also being used as a tool by Project Management and Facility Representative personnel.

3.6.1 **Miamisburg Environmental Management Project Executive Summary**

A new contractor, Babcock & Wilcox of Ohio, Inc. (BWO) assumed responsibility for the Mound contract on October 1, 1997. During the first quarter of FY98, BWO is conducting a Due Diligence Facility Assessment for the purpose of evaluating the Baseline Validation Schedule submitted with their proposal against unplanned schedule and cost impacts from undiscovered or unknown conditions from the information used to create the proposal. This assessment is literally a room by room, building by building assessment of conditions at the site. The transition of a new contractor, coupled with the revalidation process and the overall magnitude and complexities associated with the Mound site, will be more fully understood after the completion of this assessment. The Due Diligence Assessment is scheduled for completion in early second quarter of FY98.

As the assessment is ongoing, numerous issues and concerns have been identified and concerted efforts to more fully characterize the site and understand the vulnerabilities will be achieved through this effort. The DOE MEMP Project Office is closely following this process and has participated in walkdowns of rooms and buildings. BWO and MEMP have accomplished a great deal toward evaluating the site posture regarding hazards and potential vulnerabilities. However, since BWO only assumed responsibility for the Mound Site on October 1, 1997, there will be a need to continue reporting the progress of these initiatives into 1998.

To summarize, the Mound site is making progress with the Secretarial Initiatives, however the Baseline Validation process will create a delay in meeting the full intent of the Secretarial memoranda. The DOE MEMP will validate the BWO Baseline during the period of January to March 1998. During the same time period, BWO is expected to submit a set of Baseline Change Proposals that will identify conditions affecting cost that BWO has located during its assessment.

In the interim, the DOE MEMP will continue to monitor BWO's progress and conduct independent reviews of the assessment activities. Upon completion of the chemical vulnerability assessment, any previously unknown vulnerabilities may result in adjustments to hazard assessments, emergency response procedures and Emergency Readiness Assurance Plans.

3.6.2 Miamisburg Inventory and Chemical Safety Issues

3.6.2.1 Site Hazard Assessment

BWO has several initiatives that have completion dates in calendar year 1998. This report provides the current status of each initiative. A follow-up report by BWO and the DOE MEMP to the DOE Ohio Field Office will be provided by the end of February, 1998.

The Mound Facility Assessment Plan was completed on November 3, 1997. The primary objective of this assessment was to identify hazards associated with physical conditions and materials within buildings and facilities at the Mound Site. This assessment also served as an opportunity for the new contractor, BWO, to conduct a first-hand validation of their proposal against the actual conditions and hazards as observed during their building-by-building review. As new conditions or issues were identified, a projection of cost and schedule variance was determined and will be presented to the DOE for further consideration. The *Environmental Appraisal Report of the Mound Site* (Vol. 1-12, March 29, 1996) and the *Integrated Comprehensive Plan*, Final Draft, May 3, 1996 and July 22, 1996 (known as the Mound Ten Year Plan) define the baseline conditions for the contract between the U.S. Department of Energy and BWO.

A review of Automated Maintenance Management system and the Discrepancies Evaluation/Corrective Action Report System will be included. The deliverable of this effort will be a report containing a tabulation and assessment of the environmental, health and safety (including nuclear safety) and radiation hazards within facilities, recommend follow-up activities or corrective actions, and an assessment of the potential impact of each hazard on baseline cost and schedule.

BWO has conducted a site wide inventory and verification of chemicals in containers. An inventory of chemicals, by building, consisting of known and unknowns has been listed. A team of environment, safety and health professionals have screened the lists to identify specific hazardous conditions. Unknown chemicals are being characterized and screened for disposition. The grounds, including the Miami-Erie Canal, current excavation sites, unused property between the south fence and Benner Road, steep slopes in the Test Fire Valley (TFV) and any previously unidentified locations of possible burial sites were included. Designated Potential Release Sites (PRS) are being addressed separately and will not generally be included unless an area was found that should be considered for PRS designation. Disposition of chemicals will be accomplished within 18 months of characterization. The approach utilized a combination of visual building assessments by an Assessment Team, interviews with points of contact and building residents,

review of available and relevant historical records and verification of existing Mound ES&H documents. Included in this assessment were visits to the majority of Leased buildings/facilities on-site to ascertain potential hazards to BWO and DOE employees, emergency management/response potential concerns and to become more aware of potential impacts to lessee operations when cleanup/demolition operations may be occurring in the vicinity of leased buildings. MEMP staff participated in numerous building reviews during this process.

Also, a complete sitewide inventory and verification of chemicals in idle equipment, tanks and process lines has been initiated with a goal for completion by January 31, 1998. This initiative reviewed documents for chemical(s) information pertaining to idle equipment, tanks and process lines to evaluate/identify potential hazards. Unknowns will be characterized and screened for disposition. As reviews are completed, options for dispositioning chemicals, equipment, tanks and hardware are being evaluated.

A report will be generated containing the following information: (a) a brief description of the overall approach, (b) a tabulation and assessment of conditions and hazards focusing on ES&H (including nuclear safety) and radiation conditions and hazards with the facilities at the Mound Site, (c) recommended follow-up activities or corrective actions and (d) an assessment of potential impact of each condition or hazard on the overall schedule and cost toward exiting the Mound Site.

Hazard Assessments provide the technical basis for emergency planning activities related to the Mound site facilities. There have been five hazards assessments conducted on major facilities at Mound. They were: the Semi-Works/Research (SW/R) Building; Technical (T) Building; and Buildings 38, 50 and 72. These buildings contain materials that might require emergency planning and were examined in more detail via hazards assessments. An *Emergency Management Hazards Assessment Summary for the Mound Site* was conducted in August, 1997. This assessment recognized the need for additional evaluations for Category III facilities, including Buildings 22, 23, and HH. A recommendation was made to evaluate these facilities against the 10 CFR 30.72, Schedule C criteria. This report has been submitted to DOE for review.

As noted above, Building HH was identified as requiring additional hazard characterization activities prior to assumption of control by BWO. BWO staff have been very proactive in identifying hazards in HH. A comprehensive plan to mitigate these hazards and others identified through the assessment activities is being scheduled along with the rebaseline activities.

3.6.2.2 Site Vulnerability Assessment

Based on all the compiled information from the assessments, a chemical vulnerability assessment has been initiated that addresses the issues in the Secretary of Energy's Memorandum, dated August 4, 1997.

This initiative will take the results of all the building reviews and define the significant vulnerabilities. This information will be provided to project managers addressing immediate concerns or risks to workers or the environment and for incorporation into the safety planning process ensuring that workers and the necessary safety precautions are taken.

An Interim Status Report from BWO dated December 4, 1997 listed several important observations that present challenges to the site. BWO and DOE MEMP are working within the approved contracting mechanism to address the issues. Firm plans to address these vulnerabilities are being developed. Closure of these issues will be addressed by BWO and DOE in the 1998 Emergency Readiness Assurance Plan.

3.6.2.3 Staff Technical Competencies

The Integrated Mound Facility Assessment/Due Diligence Facility Assessment has utilized off-site experts for independent verification of hazards. On site experts, Building Managers, Facility Managers and Technical Subject Matter Experts have been utilized for their historical perspective and continuity of operations.

MEMP and BWO are committed to a highly professional training program for emergency responders. All emergency response personnel are required to participate in at least one EOC exercise annually. The Mound Emergency Management Training Plan was reviewed and updated July, 1997. BWO Emergency Management Orientation training was conducted in September and December, 1997. Emergency responders training was conducted in August, November and December, 1997. The DOE Emergency Management Decision Making Training was conducted October 22, 1997. Incident Command Training was conducted in June and July, 1997.

3.6.2.4 Lessons Learned Program

As a result of Secretary Peña's memorandum, the BWO has conducted a detailed review of the Lessons Learned Program. There were three specific enhancements to the Lessons Learned Program identified; not maintaining auditable records of published lessons learned, follow up on lessons learned to determine if appropriate actions were being taken by line management or were not accomplished; and lessons learned from occurrences at other DOE sites and the commercial sector were not routinely evaluated for site applicability. The BWO has completed corrective actions. These changes to the Lessons Learned Program will provide an effective and efficient means for developing and disseminating lessons learned information from across the DOE complex and industry. Lessons Learned information will be generated from internal/external sources including occurrence reports, DOE/industry lessons learned, worker experiences, etc. Lessons Learned information will be transmitted to managers consistent with their defined scope of work and potential job hazards. Weekly/monthly work schedules, project plans, hazard analysis, and scope of work documents are reviewed and appropriate lessons learned are generated/provided.

3.6.2.5 Occurrence Reporting Program

As a result of Secretary Peña's memorandum, BWO has conducted a detailed review of the Mound input into the Occurrence Reporting and Processing System (ORPS). Several enhancements to the program have been incorporated and the Mound Site ORPS Implementation Manual will be updated by May 15, 1998. Included in this assessment was: technical competence of the individuals submitting, receiving and reviewing ORPS information; sources of information to the ORPS reports; screening incidents for reportable information (thresholds); reporting; root cause analysis; completeness and timeliness of reports; use of reports for corrective actions; training for reporting coordinators; self-assessment program for reporting; and, documentation of information needed for effective feedback.

Facility Managers were interviewed to assess their knowledge and proficiency in the use of the ORPS process. It was determined that the Mound Facility Managers exhibited sufficient knowledge and abilities to provide occurrence reports that accurately characterize and properly describe events being reported. A documented root cause analysis is performed for each ORPS reportable event. This methodology provides the DOE Facility Representatives a logical flow for determining root causes.

All ORPS corrective actions are tracked to completion on the sites' commitment tracking system. Closure of the corrective actions are contingent on the Facility Manager verifying the completion of each action item. Corrective actions are periodically selected for independent verification by the Quality and Audits Function.

3.6.3 Miamisburg Notification Issues

3.6.3.1 Categorization and Recognition

The Mound Plant Emergency Plan (Response Plan 1) defines the operational emergency categories, which are consistent with DOE Guide 151.1 and DOE Order 232.1. The Mound System Manual 721 outlines emergency procedures and response plans utilizing Emergency Plan Implementing Procedures (16 Plans/Procedures) that provide more specific guidance. This manual was reviewed and updated in September 1997.

3.6.3.2 Training

The training course on Emergency Management Decision Making was conducted at Mound by DOE-HQ on October 22, 1997. Representatives from BWO, OH and MEMP and Local Emergency Management Agencies participated in this training. Attendees included Emergency Duty Officers, Incident Commanders, Environmental Modeling personnel and senior DOE and BWO Crisis Management Team personnel.

BWO has defined a series of emergency management training activities for FY98. Emergency

responder call-in drills will be conducted monthly and alarm familiarization drills will be conducted quarterly. Exercises/Drills to evaluate an ES&H event, interfacing with off-site emergency response agencies and a take-shelter event will be scheduled in FY98. Actual dates will be determined based on internal/external agencies availability to participate and to allow incorporation of the chemical vulnerability assessment information into the exercise scenarios.

Improvements to the off site notification system were made in 1997 as a result of the Lessons Learned from the Mound Tritium release in October 1996. Changes to procedures were made, staff were selected and trained and a notification drill was conducted in July 1997.

3.6.3.3 Federal, State, Local Agency Feedback

Several Memorandums of Understanding (MOU) between the U.S. Department of Energy (MEMP) and outside emergency management agencies have been utilized over the years to ensure potentially interested parties are integrated into site-specific incidents for appropriate support, mutual aid or coordination of emergency information to employees and the public. Five of the MOUs relate specifically to ES&H or Emergency Management-type support. The MOUs are in the process of being reviewed and updated to reflect changes in the overall Mound operations and activities at the Mound Site. The five MOUs are:

- MOU between U.S. DOE and Kettering Medical Center (Sycamore Hospital);
- MOU between U.S. DOE and the City of Miamisburg, Ohio for Mutual Firefighting and Emergency Response;
- MOU between U.S. DOE and the City of Miamisburg, Ohio for Police Response;
- MOU between U.S. DOE and the State of Ohio Emergency Management Agency;
- MOU between U.S. DOE and the State of Ohio Miami Valley Emergency Management Agency;

These MOUs between the U. S. DOE and the emergency management agencies will become increasingly more vital to the overall Mound site as the DOE expedites the cleanup of the Mound site and the DOE exits the site allowing the community to reuse the site for private reuse.

Two other external organizations specializing in emergency response that would be accessible during an incident are the Dayton Regional Hazardous Materials Response Team and the Miami Valley Technical Rescue Team. These agencies are available through the organizational charters.

3.6.3.4 Emergency Readiness Assurance Plans

The Emergency Readiness Assurance Plan was submitted to DOE for approval in September, 1997. DOE MEMP reviewed the plan. The Ohio Field Office approved the plan however, minor deficiencies were identified in the content of the plan. The deficiencies were identified and provided to the MEMP Project Director for resolution.

3.6.4 Miamisburg Emergency Management Lessons Learned Issues

3.6.4.1 Emergency Management Decision Making

Actions were taken to evaluate and improve training for facility and site emergency management personnel. The review also evaluated equipment capabilities to deal with all hazardous potential incidents and the qualification(s) of personnel for a “wide variety of potential radiological and chemical hazards.” External medical requirements were reviewed and verified and comprehensive procedures to attend personnel who are effected by an accident were reviewed and updated.

As indicated above, the training course on Emergency Management Decision Making was conducted at Mound by DOE-HQ on October 22, 1997. The training stressed the importance of the emergency responders and crisis management teams utilizing conservative judgments when assessing facility conditions and personnel exposures. All exercise/drill scenarios planned in FY98 will incorporate judgment skill requirements into the role playing to test the responders and crisis teams’ decision making. Post exercise critiques are conducted to identify lessons learned in areas of emphasis such as decision making, responsiveness, and communication. A series of emergency management training exercises are planned for FY98.

3.6.4.2 Protective Equipment and Staffing

The Mound Site was a formerly Nuclear Weapons Complex production facility that handled primary explosives, pyrotechnics and radioactive materials. Resulting from this activity were a fairly elaborate and comprehensive procedures and emergency management programs capable of dealing with a wide variety of incidents. An Emergency Preparedness Manual (Systems Manual 721) outlines emergency procedures and response plans that are designed to deal with specific emergency procedures.

The Mound Plant Emergency Plan (Response Plan 1) defines building locations where emergency communications, fire extinguishing equipment, spill control equipment, decontamination supplies, and personnel protective equipment are located. Also included in this plan are the on-site fire apparatus, incident command van and Haz-Mat trailer with their capabilities.

The Health Physics Nuclear Emergency Procedures (Response Plan 2) provides important information on portable instruments (or in fixed locations) for emergency rescue operations. Included in the document are the equipment specific types of radiation measured, the range of instrumentation and important information specific to the instrument capabilities.

The Mound Plant Contingency Procedure (Response Plan 9) provides a similar list of building locations where emergency communications, fire extinguishing equipment, spill control equipment, decontamination supplies, and personnel protective equipment are located. MEMP staff have visited several locations to assess equipment lists and capabilities and no discrepancies

were observed.

MEMP conducted a review of Industrial Hygiene (IH) PPE equipment on-site to validate availability (state of readiness and calibration). IH procedures were in place to operate the equipment. Approximately 200 half face and full face respirators are maintained in the respiratory protection department. Inspection checklists for full and half face respirators were in place for users to conduct inspections of the equipment prior to use. A review of the Self-Contained Breathing Apparatus (SCBA), cylinders and breathing are at the fire department was also reviewed. Cylinders were hydrostatically tested in 1996 (every 3 years). SCBAs are visually and functionally checked monthly and with each use. SCBAs were bench tested for leaks and pressure by a certified vendor last year. All respirators at the fire department are new and fire fighter fit tests were up-to-date.

3.6.4.3 Protective Treatment of Personnel

The Emergency Medical Procedure and the Health Physics Nuclear Emergency Procedures, which are part of the Emergency Preparedness Systems Manual 721, were reviewed in August, 1997. Emergency responders and medical staff conducted an emergency response training seminar at Sycamore hospital. Approximately 50 resident Sycamore hospital medical staff participated in the training. The seminar provided information pertaining to: types of injuries that can occur at Mound; familiarization with radiological monitoring equipment; and accepted techniques for the safe treatment of a contaminated patient. Realistic exercises are planned to provide a demonstration that communications and procedural information is adequate to and from each facility. Supplemental procedures have been provided to Sycamore hospital for additional reference and resource guidance.

3.6.4.4 Hazards Information

As described above, a training seminar was conducted at Sycamore hospital addressing chemical and radiological hazards that could be encountered at the Mound Site. A demonstration of radiological equipment was also provided. Upon completion of the chemical vulnerability assessment, and based on the availability of emergency medical staffs at both locations, drills and exercises will be conducted to demonstrate the adequacy of communications regarding injured/contaminated patients as well as the medical facilities potential dealing with a contaminated patient and the use of radiological monitoring equipment.

3.6.4.5 Independent Oversight

The DOE Miamisburg Environmental Management Project Office is staffed with approximately 32 FTEs, the majority being either engineers or technical professionals. The MEMP organization is preparing to reorganize to structurally align with the BWO Project Management Team concept of operation. The organizational details are still being developed, however, it is anticipated that the MEMP independent oversight will be accomplished through a matrixed approach where

project managers and project engineers will be responsible for monitoring the day-to-day oversight of their respective projects. Technical professionals will, on occasion, accompany or assist the project staff with site visits but will also conduct occasional independent assessments focused on general program support areas, such as safety program systems, industrial hygiene programs, etc. The Facility Reps provide independent oversight of major programs/facilities and provide information and feedback to the project staff and technical professionals.

Assistance for assessment and surveillance activity, document review and other oversight activity is requested from the Ohio Field Office, Office for Compliance and Technical Support on an as needed basis.

3.7.1 West Valley Environmental Management Project Executive Summary

The West Valley Demonstration Project approach to complying with the intent of the Secretarial memoranda was the preparation of two separate reports.

The first report, entitled "WVDP Evaluation of Hanford Emergency Management, Timely Notification and Lessons Learned Issues" addresses those particular issues of the Secretarial memoranda. By December 31, 1997, WVNS procedures will undergo minor revisions to ensure timely notifications and confirmation of receipt of notifications to State, local, tribal and other appropriate authorities. The recommended actions are summarized below.

The second report, entitled "Reassessment of WVDP Radiological, Nuclear (Spent Fuel/Criticality) and Chemical Vulnerabilities", addresses those particular aspects of the Secretarial memoranda. An executive summary is provided in this report. No new vulnerabilities were identified in the course of the reassessment. A series of recommended actions to ensure management and control of potential vulnerabilities was identified and are also summarized below.

The DOE-WV closely collaborated with the contractor on these reports and did not add further comments.

Although there is overlap between some of the issues, the WVDP response was formatted so that each issue identified by the DOE is addressed. The format provides a summary of the Hanford-specific concerns detailed in the Accident Review Board Report for the Hanford explosion, along with WVNS's analysis of the management systems and programs implemented at the WVDP to mitigate the potential for a similar occurrence as at Hanford. This analysis employs the technique Issues, Requirements, Analysis and Conclusion (IRAC). The benefit of using this approach is that it ensured that WVDP systems and programs were sufficiently described, while Hanford's Lessons Learned were effectively embodied in our review. This process assured that any necessary program improvements that would further mitigate a possible Hanford occurrence at the WVDP were identified and captured in an action plan.

No new vulnerabilities were identified as a result of WVNS's reassessment of WVDP facilities, process and waste streams. There are, however, parts of the Main Plant that were shutdown in the 1970s by Nuclear Fuel Services (NFS). WVNS's knowledge of these areas are based on documentation prepared by the previous operator, NFS. Although the inactive areas of the plant are considered to be in a safety configuration based on this documentation, additional characterization would be warranted should cell entries be proposed.

WVNS's review of Hanford's Lessons Learned and comparison to key WVDP programs identified several actions to improve the effectiveness of our management systems with regards to chemical management and disposition, and formalizing a program for long term shutdown or stand-by of site facilities. Table 3-7-1 summarizes the actions identified as part of this review.

**Table 3-7-1
Vulnerability Action Plan**

Proposed Action	Action Manager	Targeted Date of Completion
Complete data input and have operational by December 31, 1997, the chemical inventory tracking system CHEMTOX. This system will assist in tracking the location and inventory of chemicals and the management of expired chemicals throughout the WVDP.	Paul Klanian	12/31/97
Provide additional training to personnel in the warehouse, laboratories, Vitrification Operations, Quality Assurance and Main Plant Operations with responsibilities for chemical management on chemical handling and storage. This training would address issues associated with chemical compatability, labeling, storage, etc.	Paul Szalinski	01/31/98
Develop and/or modify warehouse procedures to require use of self contained pallets or overpacks to further segregate incompatible or potentially incompatible chemicals in controlled storage rooms.	Marcia Ciaramella	01/15/98
Developed and implement a program for assuring the orderly and safe placement of systems and facilities in extended shutdown (including, permanent shutdown and decontamination and decommissioning.	Joe Lazzaro	06/01/98

3.7.2 West Valley Inventory and Chemical Safety Issues

3.7.2.1 Site Hazard Assessment

The WVDP has developed and implemented several programs to ensure that chemicals are acquired, stored, handled, and disposed of in a manner consistent with their potential hazards. However, during a recent chemical safety walk-through in the warehouse, conducted as part of our ongoing program, some areas of the overall chemical management program were identified

as requiring additional attention to ensure adequate controls in the program are maintained.

PROCUREMENT AND WAREHOUSE MANAGEMENT PROGRAM

Warehouse material acquisition, including chemical acquisition, is controlled by procedures contained in WVDP-207, *The Property Management Manual*. These Procedures implement the controls for chemicals in controlled storage and the return of unused material to the vendor; requires use of the max/min system for chemical inventories; and, controls warehouse receiving, storage and withdrawal. WV-912, *Hazardous Chemical Storage* is the site program that dictates the management of containerized chemicals on-site. This program requires that:

- Chemicals be stored in accordance with manufacturer's recommendations.
- All chemicals be labeled.
- Chemicals with a shelf life be labeled with date received and the expiration date.
- An annual inspection of all chemicals in stock and storage.
- Only enough inventory is maintained necessary for uninterrupted operation.
- New shipments of chemicals are rotated with existing stock.
- Chemicals be stored in original container or compatible container only.
- A formal site program ensures that an evaluation is performed at least annually.

A formal site program ensures that an evaluation is performed at least annually to monitor for those chemicals stored at the site which may no longer be in active use. This program is implemented through procedures contained in WVDP-207, *WVNS Property Management Manual*. This program provides a mechanism through which cognizant managers are notified that chemicals for which they have responsibility have been in inactive storage for twelve months. WVDP-207 also provides the mechanism by which managers indicate their preference for either continued storage of these chemicals for future use or for initiation of the process by which excess chemicals are permanently removed from WVDP storage facilities.

The initial step involved in removing unneeded chemicals from the site involves contact of the original vendor for acceptance of the chemicals. Should the vendor decline to accept return of the chemicals, formal Standard Operating Procedure 300-07, *Waste Status Determination*, July 7, 1997, Rev. 7, provides guidance by which these chemicals, as well as all site wastes, are classified for disposal.

Monthly screens to confirm that chemical inventories on-site are within the authorization basis are performed on chemicals stored in WVDP warehouses. These screens compare quantities of chemicals on-site to threshold values cited in DOE Order 151.1, *Comprehensive Emergency Management System*. The CHEMTOX chemical tracking system is currently being implemented at the WVDP and will provide comprehensive tracking of all chemical inventories at the WVDP.

INDUSTRIAL HYGIENE AND SAFETY PROGRAM

The WVDP has established a comprehensive industrial hygiene and safety program dedicated to the anticipation, recognition, evaluation, and control of occupational hazards and/or stressors that may cause sickness or impair health. This program is implemented through WVDP-011, *WVDP Industrial Hygiene and Safety Manual*, which incorporates the guidance of DOE Order 5483.1A, *Occupational Safety and Health Program for DOE Contractor Employees at Government-Owned Contractor-Operated Facilities* (USDOE June 22, 1983) and DOE-adopted Occupational Safety and Health Administration (OSHA) standards 29 CFR 1910, *Occupational Safety and Health Standards* and 29 CFR 1926, *Safety and Health Regulations for Construction* (U.S. Department of Labor). Several organizations, including the Industrial Hygiene and Safety (IH&S) Department, WVNS Engineering groups, Operations Support, Training and Development, and Employee Health Services, are responsible for implementing aspects of the hazardous material protection program.

It is the policy of WVNS to keep safety and health risks as low as reasonably achievable (ALARA). Hazardous materials are identified, controlled, monitored, handled, and stored in a manner consistent with the ALARA philosophy. The major components of hazardous material exposure control are Hazard Prevention and Hazard Control. Hazard Prevention is that part of the safety program dedicated to the elimination of hazards through design and planning. The review of new facility and process designs, and the purchase of less toxic materials are two examples. Hazard controls, which are the means applied to existing hazards to ensure worker safety, include:

- Substitution - e.g. using non-toxic or lower hazard products or equipment
- Engineering Controls - e.g. laboratory fume hoods
- Administrative Controls - e.g. procedures and worker training
- Personal Protective Equipment - e.g. respirators, gloves

Measures for the control of hazardous materials are required at many levels at the WVDP. Controls begin during the design phase by including IH&S review and approval whenever the potential for hazardous materials exposure is present or wherever industrial hazards may occur. Controls continue through process operation and completion via the review process and appropriate industrial hygiene programs and procedures. IH&S reviews site-wide procedures whenever industrial hygiene or industrial safety hazards are expected to be encountered, thus ensuring that proper controls are identified.

An additional managerial control is the industrial work permit (IWP) system. The IWP is a permit system which reviews and controls unique and/or high-risk jobs. Jobs subject to review include but are not limited to those involving hazardous material handling. The IH&S Department reviews all except the simplest IWPs to evaluate the hazards, specify necessary personal protective equipment, and issue any appropriate precautionary warnings. WV-911, *Industrial Work Permits*, details the policy and administrative control in place for use of the IWP.

To reduce occupational exposure to the lowest practical levels, the planning and design aspects

of all work are required to include consideration of safety hazards and risks to health. This is done during the design stage by using engineering controls such as ventilation, containment, isolation, and/or substitution. Remote handling, automatic feed, and exhaust or off-gas scrubbing are examples of system planning intended to separate workers from process hazards. Per WVDP-011, *WVDP Industrial Hygiene and Safety Manual*, IH&S is required to review and approve all equipment designs and purchases intended for implementing engineering control of health hazards.

Because it is a WVNS objective, per WVDP-011, to minimize the use of highly toxic and/or dangerous substances where technically feasible, substitution of less toxic/dangerous materials is done whenever possible. Formal approved procedures require that purchase requisitions for all chemical and hazardous material purchases be reviewed by IH&S for identification of potential health hazards. Depending on the nature of the hazardous material, the requisitioner may be directed to substitute a less hazardous material or initiate procurement of necessary controls or specific personal protective equipment.

Periodic monitoring verifies compliance with applicable exposure limits. The industrial hygiene staff determines the type and frequency of periodic monitoring and reports to line management regarding the continuing adequacy of controls, the need for additional controls, or recommendations for maintenance or re-emphasis of administrative controls.

A recent chemical safety walk through of the Warehouse was conducted by the Industrial Hygiene and Safety, Analytical and Process Chemistry, and Regulatory Compliance departments. The purpose of the walk through was to evaluate chemical storage practices in the controlled chemical storage rooms and general storage areas at the Warehouse. Because the team found that incompatible chemicals were stored in close proximity in the controlled storage rooms, the walk through has indicated that additional effort is necessary with regard to chemical labeling and storage in several areas.

The Warehouse relies on managers in other departments to decide when a chemical should be maintained or disposed of. If it is decided that the chemical will be declared a waste, the Warehouse holds the material until the necessary paperwork is complete. However, because excess chemicals have not always been removed from the warehouse in a timely manner, congestion in the controlled storage rooms and in the general storage areas developed. Therefore, a memo (E.D. Savage to Distribution, July 10, 1997, Memorandum IA:97:0007) was issued to managers who maintain inventory in the Warehouse requesting a review of chemicals stored in an attempt to reduce any unnecessary quantity stored. 42 chemicals were excessed and have been disposed. Additional progress will be made when the CHEMTOX system is implemented as discussed in Section 2.4. Damaged/old drums of nitric acid that were identified as a potential hazard were utilized in the Main Plant. Wooden pallets which were in use in the controlled storage areas have been replaced by plastic tray pallets.

Analysis/Conclusion:

The WVDP has developed and implemented programs to ensure that chemicals are acquired, stored, handled, and disposed of in a manner consistent with their potential hazards. However, during a recent chemical safety walk through of the warehouse several items in the program were identified requiring additional actions:

1. Complete data input and have operational by December 31, 1997, the chemical inventory tracking system CHEMTOX. This system will assist in tracking the location and inventory of chemicals and the management of expired chemicals throughout the WVDP. Note: this item is currently tracked on the WVNS Open Items Tracking System.

Action Manager: Paul Klanian

Target Date of Completion: 12/31/97

2. Provide additional training to personnel in the Warehouse, Vitrification Operations, Laboratories, Quality Assurance and Main Plant Operations with responsibilities for chemical management or chemical handling and storage. This training will address issues associated with chemical compatibility, labeling, storage, excessing chemicals, and disposal of unused chemicals, etc.

Action Manager: Paul Szalinski

Target Date of Completion: 01/31/98

3. Modify warehouse procedure (WVDP-207, prop-11) to require use of self contained pallets or overpacks to further segregate potentially incompatible chemicals in controlled storage rooms.

Action Manager: Marcia Ciaramella

Target Date of Completion: 01/15/98

The WVDP has programs in place to review, on an ongoing basis, the safety of facilities, processes, and systems including analysis of chemical conditions and process chemical solutions.

3.7.2.2 Site Vulnerability Assessment

On February 14, 1994, the DOE directed the Office of Environment, Safety, and Health to conduct a broad-based review to identify chemical safety vulnerabilities confronting the DOE. These vulnerabilities represent circumstances or conditions that could result in fires or explosions from uncontrolled chemical reactions, exposure of workers or the public to hazardous chemicals, or releases of hazardous chemicals to the environment. The review was conducted by the Chemical Safety Vulnerability Working Group, which was composed of environmental, safety, and health (ES&H) professionals representing DOE line management and contractor organizations in partnership with the Office of Environment, Safety, and Health. The WVDP was visited for this assessment during its field verification phase, in which it was determined that the site maintains a very high level of ES&H awareness. A tour of the hazardous waste storage facility indicated that this facility is well maintained and operated (including the use of specially

designed storage lockers with built-in alarms and fire suppression systems), and that a strong management program is in place for the storage and off-site disposal of hazardous waste.

The following quotations from the assessment team report summarizes its main findings:

The operating laboratories at the site were well maintained, and management controls have been developed, implemented, and followed. Chemical holdings were kept to a minimum through use of a system that approaches “just-in-time” procurement. At one monitoring laboratory reagents were excessed at the end of their expected shelf life. No large or out-of-date storage of chemicals were found at the site.

Overall, the site was observed to have a strong ES&H program, which in turn was an integral part of the demonstration project. No chemical safety vulnerabilities were identified at the three facilities visited, and based on interviews with key personnel at the site, these three facilities were typical of the high level of ES&H awareness demonstrated throughout the site. (DOE/EH-0396P, USDOE September 1994)

A number of assessments of potential vulnerabilities at the WVDP have been performed. This section provides a summary of these assessments for both active and inactive facilities. This section also presents the results of the reassessment of vulnerabilities conducted to satisfy the DOE action memorandum.

WVDP NUCLEAR VULNERABILITY SUMMARY

Nuclear materials at the West Valley Demonstration Project include spent nuclear fuel assemblies in storage in the Fuel Receiving and Storage (FRS) Facility and those buried in the NRC-Licensed Disposal Area (NDA); fissionable materials in high level waste Tank 8D-2 and in byproduct wastes stored in the Lag Storage Facility and the Integrated Radwaste Treatment System (IRTS) Drum Cell; and, solid and liquid fissionable material-bearing wastes existing in Main Plant cells and process equipment as legacy contamination. Nuclear materials at the WVDP originated from reprocessing of enriched spent nuclear fuel assemblies by Nuclear Fuel Services. In 1983, 625 spent nuclear fuel assemblies in storage in the FRS were returned to the owner utilities. No other significant shipments of nuclear materials have been made since that time and no additional receipts of nuclear material were made following cessation of reprocessing by NFS in 1972. Consequently, the total inventory of these materials at the site is fixed, aiding in the identification and management of these hazards.

Individual Facility/Process Vulnerabilities

Nuclear materials at the WVDP exist in both active and inactive facilities, and in both solid and liquid form. Potential vulnerabilities associated with these materials within individual site facilities or processes are discussed below.

Main Plant

The original NFS process involved three distinct process streams, each of which contained significant quantities of nuclear materials, as defined in ANSI/ANS-8.3, *Criticality Accident Alarm System* (ANSI 1986), and expanded upon in WVDP-162, *Nuclear Criticality Safety Program Manual* (WVNS). These streams include the uranium and plutonium process streams and the liquid high level waste stream and the solid waste stream. Potential vulnerabilities associated with each of these streams as well as legacy contamination remaining in plant cells and process equipment are discussed below.

The process stream containing by far the greatest amount of fissionable material was the original product stream. Process equipment associated with this stream was formerly located in the Extraction Cell 3 (XC-3), the Product Purification Cell (PPC), the Uranium Product Cell (UPC), and the Product Packaging and Handling (PPH) area of the Main Plant. Following cessation of processing by NFS in 1972, tanks and piping in these cells were extensively decontaminated as part of a facility-wide decontamination effort. In the mid-1980's much of the equipment was removed altogether and associated cell areas were extensively decontaminated by WVNS in support of the WVDP. Residual NFS product remaining in the UPC cell vessels (5D-15 tanks) was collected and encapsulated in a cement waste form which was transferred to the Lag Storage Facility.

High level wastes generated by NFS constitutes the second waste stream. These wastes, which were transferred to either the PUREX waste Tank 8D-2 or the THOREX waste Tank 8D-4, have been treated by the IRTS and are currently serving as feed to the Vitrification Facility. Potential vulnerabilities associated with these wastes will be discussed below under IRTS Vulnerabilities and Vitrification Facility Vulnerabilities, as appropriate.

The third NFS process stream includes the solid wastes that were disposed of in the NDA. Nuclear material associated with this stream include unleached fuel remaining in fuel hulls, nuclear material adsorbed onto disposed process equipment and absorbed into ion exchange resin, and miscellaneous contaminated debris resulting from plant decontamination and maintenance activities. Of special importance are 42 failed New Production Reactor (NPR) fuel assemblies which were encased in cement within 30-gallon drums and buried in the NDA. These wastes, including the failed fuel, are located in deep trenches which have subsequently been backfilled and capped. In 1986, disposal activities in the NDA were discontinued. Since that time no changes have occurred in the nuclear material inventory of the NDA and no work activities except routine monitoring are conducted in the area. A groundwater collection and monitoring system was installed to enhance the monitoring effort. As a result, except for natural geological processes, no mechanism which would change the current safe configuration of this material exists. Alternatives for final closure of this facility are being developed as part of the site final environmental impact statement.

Most nuclear material remaining in the Main Plant today exists as contamination in plant cells,

ventilation/filter banks, and process equipment. Areas of the Main Plant that contain the most significant quantities of nuclear material are currently inactive and process equipment in these areas were shut down by Nuclear Fuel Services in the 1970s.

The largest inventory of nuclear material in the Main Plant is located in two cells that comprise the “front end” of the fuel reprocessing cycle. These “front end” cells are the General Purpose Cell (GPC) and the Process Mechanical Cell (PMC). In this area, fuel assembly hardware was removed and assemblies were mechanically processed in preparation for chemical processing. Leached hulls and other processing scrap was also packaged for disposal in this part of the plant. Consequently, the nuclear material in the PMC and GPC is in the form of saw and shear fines and leached fuel hulls. The potential vulnerability that this material represents is well recognized (see Connors 1993) and several analyses to characterize these materials and analyze the potential for inadvertent criticality have been performed (see Vance 1986, Greenborg 1996, Wolniewicz 1993, and WVNS-SAR-002). The conclusion of these analyses is that the material is safe in its current configuration and WVNS has committed to performing additional analysis and/or characterization of the material prior to performing work in the cells (WVNS-SAR-002).

Other areas of the Main Plant potentially containing nuclear material include Extraction Cell 1 (XC-1) and Extraction Cell 2 (XC-2). Based on process knowledge, cell survey information, and process decontamination records (Reithmiller 1981), it is not believed that any significant concentration of nuclear material exists in either of these cells. Rather, nuclear materials in these cells is distributed throughout process equipment and exists as surface contamination on the floors, equipment, and walls.

Fuel Receiving and Storage (FRS) Facility

The FRS Facility is designed for the receipt, storage, and handling of spent nuclear fuel assemblies. The facility's current function is the interim protective, custodial, safe storage of the 125 spent nuclear fuel assemblies remaining from NFS. Fuel inventory in the FRS includes 40 pressurized water reactor (PWR) assemblies and 85 boiling water reactor (BWR) assemblies.

An investigation of the vulnerability of spent nuclear fuel stored in the FRS was part of a DOE initiative in 1993 to systematically evaluate irradiated nuclear material vulnerabilities throughout the DOE complex. The final site report, (see Connors 1993), indicates that no significant vulnerability exists with respect to the fuel stored in the FRS. No changes have been made to fuel storage since issuance of the final site report (see Connors 1993) that would result in new nuclear vulnerabilities. In addition, routine water quality monitoring of the FRS pool water indicates no substantial change to the condition of the fuel rods.

IRTS/Vitrification/High Level Waste Tanks

The Integrated Radwaste Treatment System (IRTS) is comprised of the Supernatant Treatment System/Sludge Mobilization and Wash System (STS/SMWS), the Liquid Waste Treatment

System (LWTS), the Cement Solidification System (CSS), and the Drum Cell (DC), and was designed to decontaminate, concentrate, and stabilize the supernatant fraction of the high level wastes originally stored in Tanks 8D-2 and 8D-4. Although the original mission of the IRTS is complete (currently, the CSS is inactive), the STS/SMWS and LWTS continue to operate in support of the Vitrification Facility.

A significant fraction of the nuclear material inventory remaining at the WVDP resides in HLW Tank 8D-2, which serves as the feed tank for both the IRTS and the Vitrification Facility. High level waste solutions processed by the IRTS are transferred from Tank 8D-2 to ion exchange columns located in Tank 8D-1. These ion exchange columns contain zeolite resins that selectively remove cesium and have been treated with titanium to produce an affinity for plutonium to reduce carryover to the LWTS evaporator. Prior to SMWS startup, a comprehensive evaluation of the criticality safety of major vessels and components in the STS was performed. Assessment of the criticality safety evaluations has shown that criticality during STS operations is not credible under normal and abnormal operating conditions (Prowse 1991).

The concentration of fissionable materials in high level waste in Tank 8D-2 is critically safe by a wide margin. No credible means of concentrating fissionable material in Tank 8D-2 has been identified and an analysis of the suspension and mixing of sludge in Tank 8D-2 determined that an inventory of plutonium and uranium ten times that found in Tank 8D-2 is critically safe (WVNS-SAR-002). An evaluation of the Vitrification Facility, which does contain equipment to concentrate slurries transferred from Tank 8D-2, determined that the maximum k_{eff} of any component in the facility is much less than 1 (WVNS-SAR-003). No changes to the system have been identified as part of this reassessment that would result in new nuclear vulnerabilities.

Lag Storage Facility

The Lag Storage Facility (consisting of the Lag Storage Building and Lag Storage Areas 1, 3, and 4), provides interim (lag) storage for solid wastes generated at the WVDP, including Class A, B, C low level radioactive waste (LLRW), and TRU wastes. These include wastes generated during decontamination of the Main Plant building, including stabilized uranyl nitrate solutions originally present in plant process equipment. Per the requirements of site administrative controls, the fissile material content (or bounding value) is determined for each suspect TRU waste container transferred to the facility to ensure that criticality limits are not exceeded. No new nuclear vulnerabilities have been identified as part of this evaluation.

REASSESSMENT OF RADIOLOGICAL AND CHEMICAL VULNERABILITIES

DOE Order 151.1, *Comprehensive Emergency Management Program* (USDOE September 25, 1995) required a comprehensive site hazards survey to identify facilities containing large quantities of hazardous radiological and chemical materials. This recent WVDP survey which will be reviewed at least annually and updated at least every 3 years, (and when warranted by changes in the site chemical and radiological inventories), was conducted using a combination

of: a) reviews of existing site documentation and databases, b) interviews with cognizant site personnel, and c) physical walk-through of the facilities. A primary purpose of the survey was the evaluation of quantities of chemicals and radionuclides in WVDP facilities to ensure that the emergency response program has been developed commensurate with potential operational emergencies involving those chemicals and radionuclides. In addition, the survey documented and summarized storage and use conditions at the facilities, fire risks, other materials of potential concern at the facilities, occupancy, and hazard of contents.

The complete hazards survey, which is presented in WVDP-273, *WVDP Hazards Survey* (WVNS), provides a mechanism by which potential initiating events for operational emergencies are identified and tracked. WVDP-273 contains complete information on the purpose, structure, and development of the hazards survey, as well as a detailed bibliography of documentation supporting data presented in the hazards survey.

For the purposes of this vulnerability study, WVNS management recently reassessed those facilities under their cognizance to ensure that data presented in the hazards survey was accurate and current. No significant changes in the status of potential facility vulnerabilities were identified.

REASSESSMENT OF MAIN PLANT AREAS

Original Main Plant facilities and processes were designed and constructed to reprocess spent nuclear fuel assemblies using the PUREX (Plutonium and URanium EXtraction) process. This process involved the chemical dissolution of irradiated uranium fuel, followed by partition of fission products from uranium and plutonium, and finally separation of uranium from plutonium. Chemical dissolution of the spent fuel occurred in dissolvers located in the Chemical Process Cell (CPC). The partition of fission products from uranium and plutonium occurred exclusively within vessels located in Extraction Cell 1, while separation of uranium from plutonium occurred in vessels located in Extraction Cell 1 (XC-1), Extraction Cell 2 (XC-2), and Extraction Cell 3 (XC-3). Separation of fission products from uranium and plutonium was achieved by contacting the acidic feed solution with an organic solvent. Under appropriate conditions, the uranium and plutonium became soluble in the organic solvent, while the undesired fission products remained in the aqueous phase. Through a decant process, the fission products were separated from the uranium and plutonium. The pH of this uranium/plutonium solution was then adjusted and the plutonium entered the aqueous phase, permitting separation from uranium. A solvent cleanup process removed radioactive contamination from the solvent.

Process solutions remaining in inactive Main Plant tanks, vessels, and process piping represent a potential vulnerability if significant quantities remain, or if these solutions are volatile or have the potential to form unstable degradation products over extended periods of time. Main Plant vessels handled both organic and inorganic process streams. Risks associated with the storage of inorganic chemicals include those inherent in the material itself (e.g., corrosive, oxidizer, etc.), as well as the potential for reaction due to inadvertent mixing with other incompatible chemicals.

However, a greater risk potentially exists with long term storage of organic compounds, due to their ability to form flammable or explosive byproducts. This tendency is exacerbated in radioactive solutions, where radiolytic decomposition accelerates organic degradation.

Several original NFS tanks and vessels handled organic process solutions, including Partition Cycle Equipment (4C-1, 4C-2, 4C-3, 4C-4, 4Y-5, 4Y-6), Uranium Cycle Equipment (4C-9, 4C-10, 4C-11, 4C-12, 4Y-21, 4Y-22), Plutonium Cycle Equipment (4C-7, 4C-8), and Solvent Cleanup Equipment (13C-1, 13C-2, 13C-3, 13C-4, 13C-5, 13C-6, 13D-1, 13D-2, 13D-3, 13D-4, 13D-5, 13D-6, 13D-18). In the early 1970's these tanks as well as tanks handling inorganic process solutions were systematically decontaminated by NFS as part of an extensive program of process and facility decontamination to reduce the exposure levels of plant equipment. Prior to the initiation of system decontamination activities, all solvent present in separation columns, tanks, washers, etc., was displaced and removed from the plant. Process equipment was then decontaminated using a variety of decontamination solutions and finally flushed several times with water (Reithmiller, 1981). Further significant facility decontamination has been achieved by WVNS in areas of the Main Plant which support the mission of the WVDP. In these areas, original plant equipment and piping has been dismantled and removed from the plant altogether. Consequently, as a result of the extensive decontamination and dismantlement activities in these areas, it is not believed that any significant quantity of volatile or reactive chemicals remains in inactive areas of the Main Plant building. Further flushing of much of this equipment would be difficult due to plugged or disconnected lines, pumps, or jets.

The majority of decontamination activities in the now inactive areas of the plant were conducted and documented by NFS prior to 1981. NFS decontamination records and documented process knowledge were used jointly to conclude that there is a very low probability of a chemical vulnerability in the inactive areas of the plant. The construction of the Process Building further protects on-site workers and members of the off-site public and impacts from an upset would have limited local consequences. Plant areas in which PUREX process solutions were handled are heavily shielded to protect against the intense radiation associated with irradiated fuel contaminants. The monolithic structure of these plant cells would serve to isolate an upset condition and the volume of these areas is sufficient to absorb explosive overpressures. Evaluation of in-cell fires has found no credible means for propagation of the fire to the ventilation system filter bank nor has the means for filter bank rupture been identified as a result of an in-cell explosion (WVNS-SAR-002).

Existing documentation is collected and reviewed to determine facility conditions as an integral part of the work planning and hazards analysis process. Characterization of the inactive areas in the process building, however, is based on historical data generated by Nuclear Fuel Services, Inc. prior to 1982 and its accuracy cannot be determined with certainty. As a result, the uncertainties in material inventories or hazardous conditions are reflected in safety controls. For example, if invasive characterization is needed to confirm material inventories (e.g., obtaining samples of materials in locations or vessels that are not readily accessible), then conservative assumptions are made within safety controls to provide that (1) hold points are established for

conducting characterization or additional analysis to determine if the condition warrants establishing or changing a safety control, and (2) assumptions are sufficiently conservative to ensure that safety is not compromised before or during characterization activities.

VULNERABILITY ASSESSMENTS PERFORMED RESULTING FROM THE LESSONS LEARNED PROGRAM

- Potential for Nitric Acid and Ethylene Interaction

A study conducted at the WVDP investigated the potential for an inadvertent interaction between ethylene glycol and nitric acid (Letters D&M:94:OP:DDB:05:0035, Coco to Volpe, July 22, 1994 and D&M:94:OP:DDB:05:0037, Coco to Lazzaro, August 3, 1994). Because high concentrations of nitric acid and ethylene glycol may combine in an anhydrous environment to produce ethylene glycol dinitrate (EGDN), a commercially available high explosive, the study investigated the potential for such an event at the WVDP.

The study determined that high concentrations of ethylene glycol and nitric acid are not stored in the same location, and therefore the potential for an EGDN explosion at the WVDP is virtually nonexistent. No inadequacy in the WVDP authorization basis regarding ethylene glycol and nitric acid was identified. The West Valley Project Office expressed additional concern that the inadvertent addition of ethylene glycol to tank 8D-2 could form EGDN. An analysis of the chemical contents of tank 8D-2, and the small site inventory of ethylene glycol, indicate that EGDN cannot be formed within the tank.

- Evaluation of the WVDP Long-Term Storage Tanks

An investigation by Operations Technical Support (OTS) was performed to assess the possible existence of Hydroxylamine Nitrate and/or Nitric acid in the tanks of the Main Plant building (Memorandum JP:97:0041, Potts to Blakeley, July 10, 1997 and Letter WD:97:0597, Blakeley to Rowland, July 10, 1997). Though hydroxylamine nitrate was being planned for use in the processing of plutonium by NFS, the operation was never started. However, nitric acid was used extensively in the processing of plutonium. Decontamination efforts performed from 1973 through 1976 removed the acid from all tanks, with the exception of several tanks which had small residual heels.

This evaluation of the decommissioned acid storage tanks did not indicate any area where degradation or evaporation would lead to an explosive condition.

- Perchlorate Testing and Analysis

Analyses and sampling of ventilation systems suspected of containing perchlorate residues was conducted in August, 1994 (letter OW:94:0028, Phillips to Connors, August 23, 1994). The results of the study indicated that the entire system was contaminated. Based on these results, recommendations were made to stop operations in contaminated areas, form a perchlorate

committee, base continued operation of the system on recommendations of the committee, decontaminate the ventilation system, sample and analyze the remaining hoods and ductwork, and take appropriate corrective actions. Based on these recommendations, a perchlorate committee was convened, all the other ducts associated with the system were sampled, a decontamination plan was generated, and a threshold for serious contamination was set (WVNS, Memorandum II:94:0140, Mahoney to Connors, September 16, 1994).

3.7.2.3 Staff Technical Competencies

The overall objective of the WVNS training and qualification program is to develop certified personnel to operate the WVDP facilities safely in such areas as equipment operation, process flows, control instrumentation, radiological/industrial safety, and emergency response in accordance with DOE Order 5480.20A, *Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities* (USDOE November 15, 1994).

The guiding philosophy underlying the West Valley Nuclear Services training program is the DOE-recognized performance-based training (PBT) model. It is the industry standard for the administration of efficient and cost-effective training. The objective of this program, implemented in WVDP-126, *Performance-Based Training Program Manual*, is to provide program excellence which will result in well-trained and qualified personnel.

Analysis/Conclusions

An integral part of the training program at the WVDP is the emphasis placed on the need for all personnel to be able to accurately recognize and appropriately respond to potentially hazardous situations.

In this regard, all operators, supervisors and operations managers are required to be qualified in their area of operation with their technical competence periodically assessed through drills and exercises. Supervisors receive the identical operational training as the plant operators and can operate system controls in an emergency. In addition, supervisors receive training in emergency situation response/management, enhanced training on the basis for Process Safety Requirements (PSRs), and occurrence reporting training.

All other site personnel receive training commensurate with their duties and responsibilities at the WVDP. At a minimum, general employee training is provided which includes emergency response, hazard recognition, conduct of operations, radiation safety, industrial safety and right-to-know.

In addition to ongoing training and qualification programs, WVDP Lessons Learned program was recently revised to clarify the need for additional or specific training be completed by the Lessons Learned Coordinator in conjunction with the Training and Development Department. Necessary training is then conducted to enhance technical competence regarding internal and

external lessons learned and documented in accordance with the formal site Training Program.

Recent re-engineering efforts in the USQD Originator program has improved the competence and effectiveness of the persons serving in this site function by reducing the number of people serving in as USQD Originators and increasing the frequency and quality of the training program.

3.7.2.4 Lessons Learned Program

WVDP-242, *Event Investigation and Reporting Manual*, establishes the WVNS system for identifying, documenting, disseminating, and utilizing lessons learned. This program is based on various DOE Orders, guidance and good practices, including DOE O 232.1A *Occurrence Reporting and Processing of Operations Information* (USDOE July 1997), DOE-STD-7501-95 *Development of DOE Lessons Learned Programs* (USDOE May 1995), and DOE-HDBK-7502-95 *Implementing U.S. Department of Energy Lessons Learned Programs*, Volumes I and II (USDOE August 1995). The objective of the Lessons Learned program is to improve safety, efficiency, and effectiveness at all WVNS operation levels.

As specified in WVDP-242, all WVNS personnel have the responsibility to:

- Identify experiences, activities, processes, and practices that should be shared in accordance with the definition of lessons learned.
- Generate, or provide information for generation of, a lessons learned document
- Review lessons learned documents for applicability and/or implementation.
- Review lessons learned prior to implementation of projects, processes, etc., and to identify and incorporate applicable lessons learned.

WVDP- 242 contains formal criteria for judging a potential lesson learned to be beneficial, valid, and applicable. Once it has been confirmed that the lesson learned meets these three criteria, a lesson learned bulletin is then prepared, reviewed, validated, disseminated, and utilized in accordance with guidance presented in WVDP-242.

Lessons learned information is gathered and evaluated by site Lessons Learned Coordinator(s) who, in conjunction with Subject Matter Experts (SMEs), make a determination if the information is applicable to the WVDP, is valid (factual and logical), and would be beneficial (it is reasonable to assume WVNS personnel could repeat the same mistake or that we could benefit from the positive experience).

Once a determination is made that the lessons learned is applicable, valid, and beneficial, the information is formally distributed and, where appropriate, action plans are developed pursuant

to WVDP-242. Accident Investigation Manual. Action plans may include changes to WVNS documents, programs, procedures, or modifications to existing operations. An evaluation of the need for additional or specific training is also completed by the Lessons Learned Coordinator in conjunction with the Training and Development Department. Training is then conducted and documented in accordance with the formal site Training Program. Actions triggered by lessons learned action plans are tracked in a centralized site database through closure.

As a result of an Internal Quality Assurance Management Assessment of the Lessons Learned Program, revisions to the WVDP-242 were identified and recently completed in October, 1997. Revision 3 of WVDP-242 contains a modification to the Lessons Learned Program, describing a new method for tracking significant information and the associated actions taken by the WVDP. Significant WVDP events such as occurrences, critiques, causal analysis, and accident reports now require development of Lessons Learned information and an action plan. Significant external information will be screened and documented on an action plan.

3.7.2.5 Occurrence Reporting Program

Abnormal events at the WVDP are investigated and reported in accordance with WV-987, *Occurrence Investigation and Reporting*, and implemented via WVDP-242. WV-987 implements the requirements of DOE Order 232.1A, *Occurrence Reporting and Processing of Operations Information* (USDOE September 25, 1995), DOE Order 232.1-1A, *Occurrence Reporting and Processing of Operations Information* (USDOE July 1997), and DOE Order 5480.19, Change 1, *Conduct of Operations Requirements for DOE Facilities* (USDOE May 18, 1992). This policy establishes the requirement for WVNS to develop and implement a process for determining, evaluating, reporting, and correcting events and conditions at the WVDP, including those occurrences involving WVNS subcontractors. The types of events covered by this process include, but are not limited to, events related to safety, health, security, operations, property, or the environment.

In addition to the formal tracking structure, the WVDP also tracks events that do not meet the criteria set forth in DOE Order 232.1, *Occurrence Reporting and Processing of Operations Information* as reportable occurrences via the critique process or an event fact sheet (EFS). A non-reportable event generally warrants a critique when programmatic or system repairs may be deemed necessary or when events involve items such as injuries or illnesses. EFS's are prepared for all abnormal events which are not controlled by procedures, or have procedures in use which do not address/identify recovery actions. An average of approximately 250 EFS's are written per year at the WVDP. The EFS is used for 1.) Tracking and trending purposes, 2.) documenting notifications of a situation or condition, 3.) requiring corrective actions, 4.) future use as a tool for self-assessment planning, and spot checking for trends or area improvements, and 5.) uncomplicated OSHA recordable injuries or illnesses.

Per WVDP-242, any employee who observes any events or conditions that could have an adverse affect on safety, health, quality assurance, safeguards and security, operations, or the

environment, has the responsibility to notify their supervisor or the supervisor of the area. First-line supervisors and managers then initiate and direct the immediate response actions needed to protect personnel, property, and the environment, and to stabilize the situation in a safe, secure, condition. First-line supervisors and managers also have the responsibility to initiate data collection upon discovery of an abnormal event or condition, assist in categorizing the event, and ensure that critical data is not lost. Further guidance for performing and documenting the subsequent event investigation, performing critiques, writing the occurrence reports, and performing root cause analyses, is contained in WVDP-242.

Analysis/Conclusion:

A recent internal management review of the Lessons Learned Program resulted in the revision of WVDP-242 to include: (1) a new tracking methodology for significant information and actions taken by the WVDP; (2) clarification of the information screening process; (3) development of Lessons Learned information and action plan for WVDP events such as occurrences, critiques, causal analysis, and accident reports; and (4) screening action plans for significant external events. These revisions were completed in October, 1997.

3.7.3 West Valley Notification Issues

3.7.3.1 Categorization and Recognition

Notification of emergency and non-emergency significant events at the WVDP is incorporated into current event investigation and emergency management procedures. Implementation of DOE O 151.1 has incorporated more stringent reporting and notification requirements; however, additional program improvements are required to address timely backshift and weekend notifications, confirmation of notifications, emergency notifications when the EOC is not activated, and integration of notification requirements and methods for emergency and non-emergency significant events (integration of the interfaces between DOE O 232.1 and 151.1).

After a review of WVDP procedures and a review of the Hanford Lessons Learned, the following actions to improve notifications is recommended:

Revise emergency and non-emergency notification plans and procedures (WVDP-022, WVDP-139, and WVDP-242) to assure event notifications (including backshift, weekend, holiday, and base program emergency events) are made within the time limits specified in DOE O 151.1, DOE O 232.1 and Secretary Peña's memos on timely reporting of significant events. Include confirmation of receipt of notifications and establish proceduralized methods to determine appropriate notifications to state, local and tribal authorities (on a case-by-case) basis for non-emergency significant events.

Responsible Managers: Gerber/Karlson
Date Due: 12/31/97

3.7.3.2 Training

All Emergency Response Organization (ERO) members are required to complete course EM153C, “Annual WVDP ERO Training Course”, annually. WVDP personnel will receive appropriate training on weaknesses detected during drills, exercises, changes to WVDP-022, and lessons learned from DOE and other industrial facilities. Following initial general employee training, emergency preparedness training is provided as specified in WVDP-139, Volume II.

All qualified WVDP ERO personnel (both with tactical response in the field and strategic response at facilities) and off-site emergency response services (i.e., fire, hospital, and civil defense) have received training specific to DOE O 151.1 implementation. ERO training was done in the EM 153C course, and training for off-site responders was conducted in the briefing offered annually.

On August 21, 1997 the Emergency Management Department completed a special training session with WVDP ERO decision makers that concentrated on Operational Emergency Base Program and Operational Emergency Hazardous Material Program characterization, categorization, and classification elements. The training emphasized the importance of using conservative judgment about facility conditions and personal safety. Only one key WVDP decision maker was unable to attend the training because that person was working off-site for an extended period of time. Consequently, that person was suspended from the ERO and cannot resume his ERO duties and responsibilities until he receives the previously mentioned specialized training.

3.7.3.3 Federal, State, Local Agency Feedback

The WVDP Emergency Management Program has established Letters of Agreement (LOAs) and Memorandums of Understanding (MOUs) with off-site emergency response providers to ensure appropriate and timely response to an operational emergency.

Per Letters of Agreement (LOAs) with local medical facilities Bertrand Chaffee Hospital (BCH) and Erie County Medical Center (ECMC), the WVDP agreed to provide information about the properties of radioactive and other hazardous substances handled at the WVDP, and the types of injuries and illnesses which could result from emergencies. Training is offered to the hospitals on an annual basis, at their facilities. BCH and ECMC emergency medical personnel received training from a WVDP subcontractor between August 21 and September 2, 1997.

The LOAs have provisions for equipment to monitor contaminated or potentially contaminated personnel. WVDP-022, “WVDP Emergency Plan”, Appendix G, “Emergency Handling of Radiation Cases at Bertrand Chaffee Hospital”, describes the hospital’s plan for reception of contaminated ill/injured personnel. ECMC has developed a procedure for the care of a potentially radiologically contaminated person. Per WVDP-139, EMIP-102, Attachment E,

“Radiological Protection and Controls”, information regarding contaminated, potentially contaminated and/or injured personnel will be relayed to the receiving medical facility as soon as possible through the Incident Commander. A Radiological Controls Technician will be sent to the hospital with the injured employee to provide oversight and assistance regarding radiological, health physics and contamination control elements.

3.7.3.4 Emergency Readiness Assurance Plans

The 1997 WVDP ERAP was submitted in accordance DOE Order 151.1. The site is in the maintenance stage of ERAP preparation and submittal. ERAP's are reviewed by the DOE WVDP and forwarded for review and approval by the Ohio Field Office. Over the last several years, the WVDP ERAP has been approved with only minor editorial comments presented by the Field Office. Headquarters review of the WVDP ERAP has also been favorable over the same period.

3.7.4 West Valley Emergency Management Lessons Learned Issues

3.7.4.1 Emergency Management Decision Making

WVDP Emergency Management decision making is consistent with a conservative assessment of situations. This philosophy is emphasized in DOE O 151.1, “Comprehensive Emergency Management System”, the order being implemented at the WVDP. All elements of the WVDP Emergency Management program, including documentation, training, and drills and exercises, have been reviewed and revised to coincide with the philosophy of conservative assessment, and the new Order.

Information about WVDP emergency management drills, exercises, and training for the current fiscal year and projections for the next five fiscal years can be found in the WVDP Emergency Readiness Assurance Plan (ERAP).

3.7.4.2 Protective Equipment and Staffing

The availability of personal protective equipment and equipment for monitoring of chemical hazards at WVDP are detailed in WVDP-022, Chapter 11, “Emergency Facilities and Equipment”.

Chapter 11 provides a description of the emergency facilities and associated equipment provided to support the WVDP emergency response. Equipment and supplies necessary to support the WVDP emergency response activities are properly marked and readily accessible during emergency conditions. In addition, emergency equipment is inventoried, tested, and serviced as specified in WVDP-139, Volume II “Emergency Management Administrative Procedures” (EMAPs) to ensure accountability and reliability.

In accordance with DOE Order O 151.1, “Comprehensive Emergency Management System”, equipment and facilities are provided for emergency response personnel to fulfill their respective duties and roles.

The role of the WVDP Emergency Response Organization (ERO) is to assess any emergency on the WVDP site and coordinate, manage, monitor, and evaluate the associated response. In WVDP-022, Chapter 2, “Emergency Response Organization”, the components, functions, and responsibilities of the overall WVDP ERO and the relationship of each component to the total integrated emergency management and response effort are described in detail.

The WVDP has incorporated response concepts from the Incident Command System (ICS) developed by the National Interagency Incident Management System (NIMMS). The ICS is an emergency management system that encompasses the full scope of emergency response from the time the incident occurs until the requirement for emergency management and operations no longer exist.

If the emergency warrants activation of the Emergency Operations Center (EOC), overall emergency management functions will be transferred to the Emergency Director (ED). The WVNS President serves as the ED and has ultimate responsibility for all WVDP emergency activities per WVDP-139, Volume I (EMIPs).

The activation of the ERO is described in WVDP-139, Volume I. The Emergency Management Department ensures review, verification, and/or updating of the Strict Order of Call and ERO roster database(s). Test activation calls of the Strict Order of Call rosters are conducted quarterly in accordance with WV-108, “Preventative Maintenance Recall Tracking System.” The result of these quarterly tests are documented by the Emergency Management Department.

The readiness of the ERO is verified through periodic drills of the Strict Order of Call roster. The Emergency Management Department conducts the drills to ensure that response to the WVDP is consistent with established response guidelines and emergency preparedness needs.

WVDP has developed and implemented a Hazardous Materials (HazMat) Team that is trained, equipped, and supported by the WVDP Emergency Management Program. The HazMat Team has an industrial hygienist assigned as a Technical Advisor to provide guidance and direction on chemical and radiological hazards. The Technical Advisor is positioned on the Strict Order of Call List as a three level deep position, to ensure appropriate response. In addition, the HazMat Team is also supported by ERO Chemistry professionals. These personnel provide the HazMat Team with critical technical data and personal safety recommendations on the chemicals being managed.

WVDP HazMat Team members receive specialized training on response to chemical hazards and hazardous spills. Team personnel are skilled responders. WVDP management has made provisions to ensure that HazMat Team members can practice their technical skills and

techniques on a monthly basis. Drills and exercises are held by the Emergency Management Department to ensure appropriate response. Identified post-drill/exercise weaknesses and lessons learned are documented by the Emergency Management Department and tracked through the WVDP Tracking System to closure.

The WVDP Tracking System was implemented in response to DOE Order 232.1, Conduct of Operations, and lessons learned guidance, and requires the development of action plans and tracking of preventive or corrective actions. Through this program, WVNS has developed and implemented Lessons Learned and trend analysis programs to communicate important operating information (both external and internal to the site) and trend continuing performance. The site Lessons Learned program is detailed in WVDP-242, "Event Investigation and Reporting Manual", Chapter 11, "Lessons Learned Program" and provides a site-wide lessons learned program for identifying, documenting, disseminating, and utilizing lessons learned information at all levels of WVNS. The goal of this program is to improve the safety, efficiency, and effectiveness at all WVNS operations levels.

Analysis/Conclusions:

The WVDP Emergency Management Program has implemented management controls, procedures, and written agreements with off-site emergency providers to ensure that appropriate response to a chemical or radiological hazard will occur during the response and post-accident phases of the emergency.

In accordance with WVDP-193, Volume II, dedicated personal protective equipment and equipment for field monitoring of chemical hazards are available at the WVDP. Equipment inventories are inspected on a monthly basis and documented with the Emergency Management Department.

3.7.4.3 Protective Treatment of Personnel

WVDP-139, "Emergency Management Implementing Procedures", EMIP-101, "General Instructions", provides instructions for all WVDP personnel to report injuries. If an injury is reported via the "812" All Page system, Security will call the West Valley Volunteer Hose Company (WVVHC) for an ambulance, and the WVDP Emergency Medical Response Team (EMRT) will respond to the stated location. Radiological Controls personnel will also report to the scene to monitor the injured individual, if necessary. WVDP-253, "WVDP Emergency Medical Response Team (EMRT) Manual", contains specific instructions for medical responders. In addition, EMIP-102, "Emergency Field Response", Attachment H, "Emergency Medical Response Team", provides instructions for medical responders, and includes Radiation Protection personnel response. Letters of Agreement exist with two hospitals in Western New York for the treatment of injured and/or contaminated personnel, and another Letter of Agreement was recently signed with a Western New York air ambulance service. In addition, the responsibility of ensuring that injured/contaminated WVDP personnel are receiving appropriate

medical care and treatment is assigned to the Human Resources Manager, per EMIP-103, Attachment U, “Human Resources Manager”.

WVDP-070, “WVDP Internal Dosimetry Program Manual and Technical Basis Document”, provides a detailed description of personal radiological monitoring to be performed following accidents. WVDP-010, “Radiological Controls Manual”, Chapter 5, “Radiological Health Support Operations”, provides instructions for radiological monitoring of exposed personnel. WVDP-215, “Industrial Hygiene and Safety Exposure Assessment and Monitoring Plan”, describes monitoring for chemical agents.

WVDP Emergency Management Implementing Procedures are reviewed and updated on an as-needed basis, as a result of drills, exercises, training, or actual incidents. WVDP-070 was reviewed and updated in July, 1997.

Per the WVNS plan to implement DOE O 151.1, “Comprehensive Emergency Management System” at the WVDP, sheltering exercises are conducted semi-annually, so that the six zones which are color coded for accountability at the WVDP are tested in a three-year cycle. ALL personnel in the selected color coded zone are required to participate. Final evaluation reports are issued following each exercise, with actions, responsible managers and deadlines assigned. Sheltering instructions can be found on all telephones on the site. Evacuation postings on all exit doors contain the location of ventilation controls, and instructions for closing or shutting off ventilation can be found at the controls.

All WVDP employees are provided with basic radiation and chemical safety information in General Employee Training, which is conducted when they begin work at the WVDP, in annual updates and in biennial challenge examinations. All WVDP Security, medical and other WVDP and off-site ambulance responders are trained to recognize the health impacts of potential accidents, per WVDP-253, “WVDP Emergency Medical Response Team (EMRT) Manual” and EMIP-102, “Emergency Field Response”, Attachment H, “Emergency Medical Response Team”. These personnel also participate in realistic drills and exercises at the WVDP. Any identified weaknesses are tracked to completion by the WVDP Tracking System, and Lessons Learned are incorporated per Chapter 11 of WVDP-242, “Event Investigation and Reporting Manual”.

Analysis/Conclusions:

WVDP plans, procedures, training, and drills and exercises emphasize protective treatment of personnel and timely medical attention to injured or potentially exposed personnel, and meet the requirements as outlined in the Peña memoranda. Protective actions are proceduralized, trained and practiced in drills and exercises. Policies and procedures exist for the recognition of emergencies, employee actions, and medical treatment of personnel, including follow-up.

3.7.4.4 Hazards Information

Per Letters of Agreement (LOAs) with local medical facilities Bertrand Chaffee Hospital (BCH) and Erie County Medical Center (ECMC), the WVDP agreed to provide information about the properties of radioactive and other hazardous substances handled at the WVDP, and the types of injuries and illnesses which could result from emergencies. Training is offered to the hospitals on an annual basis, at their facilities. BCH and ECMC emergency medical personnel received training from a WVDP subcontractor between August 21 and September 2, 1997.

Equipment necessary to treat a contaminated/potentially contaminated person is available, and is controlled and monitored in accordance with WVDP-139, EMAP-204, "Facilities and Equipment".

The LOAs have provisions for equipment to monitor contaminated or potentially contaminated personnel. WVDP-022, "WVDP Emergency Plan", Appendix G, "Emergency Handling of Radiation Cases at Bertrand Chaffee Hospital", describes the hospital's plan for reception of contaminated ill/injured personnel. ECMC has developed a procedure for the care of a potentially radiologically contaminated person. Per WVDP-139, EMIP-102, Attachment E, "Radiological Protection and Controls", information regarding contaminated, potentially contaminated and/or injured personnel will be relayed to the receiving medical facility as soon as possible through the Incident Commander. A Radiological Controls Technician will be sent to the hospital with the injured employee to provide oversight and assistance regarding radiological, health physics and contamination control elements.

The LOA with BCH was reviewed and re-signed in April 1997; the LOA with ECMC was originally signed in February 1997. The Bertrand Chaffee Hospital plan for treatment of contaminated ill/injured personnel was revised in May, 1997, when the WVDP Emergency Plan was revised; Erie County Medical Center's initial plan was presented to the WVDP Emergency Management Department in August, 1997.

Although required by DOE O 151.1, "Comprehensive Emergency Management System" every three years, exercises are conducted on an annual basis with local medical facilities which validates their ability to provide information about and treat injured, exposed, or potentially exposed workers. The medical facility sets their own objectives, based on performance goals, and evaluates itself; WVDP personnel assist in establishing the objectives and preparing the scenario for hospital personnel. The hospitals have never refused, when offered, the opportunity to participate in WVDP drills and exercises.

Analysis/Conclusions:

The WVDP provides local medical facilities which have the potential to treat injured and contaminated/potentially contaminated personnel with general information regarding radiological and chemical hazards at the WVDP, and specific information following accidents as it becomes available. Procedures and training are validated by exercises, which are offered on an annual basis.

3.7.4.5 Independent Oversight

Independent oversight reviews of the WVDP Emergency Management Program are generally performed on an annual basis by the WVDP Quality Assurance Department.

The WVNS Assessment Program includes all facilities and Functional Areas under WVNS cognizance, for the specific purpose of identifying areas for improvement and correcting them. It covers all disciplines related to environmental protection, safety and health, management, and administration.

Performance elements for the WVNS Assessment Program (WV-121) are:

- Management assessments (including line-organization self-assessments);
- Independent internal assessment, and
- Performance evaluation and issues management systems.

Management Assessments are planned and conducted by line management organizations reporting directly to Staff Management.

Independent internal assessments are planned, conducted, and reported by the Quality Assurance department.

Performance evaluation and issues management systems are developed to ensure that the project requirements are implemented effectively throughout WVNS.

The systems are designed to provide management with objective, timely, and reliable information on project performance, including significant achievements and deficiencies.

The systems include:

- Root Cause Analysis and Corrective Action Programs;
- Issues Management System;
- Quarterly Trend Analysis Program, and the
- Lessons Learned Program.

The Quality Assurance Department develops Combined Oversight Plans for each Fiscal Year. The plans are developed, as appropriate, through risk-based planning and assessments of functional areas as referenced in WV-121 and facilities as referenced in WVDP-227, “WVDP Facility Identification and Classification Matrix”.

Independent internal assessments focus on assessable units and involve vertical evaluation of various Functional Areas within a specific facility.

QA reviews are performed in compliance with the following WVDP documents:

WV-121, "Assessment Program"
WVDP-111, "Quality Assurance Program"
WVDP-130, "WVNS Quality Assurance Department Work Process"
WVDP-128, "Project Appraisals Procedures Manual"

In addition, drills, exercises and actual emergencies serve as validation of WVNS Emergency Management documentation and training.

Analysis/Conclusions:

The WVNS Emergency Management Program is assessed by both internal and external assessments, drills and exercises, and responses to actual emergencies.

In order to assist the Office of Oversight, the WVDP will review the site emergency management and response system (as part of each Safety Management Evaluation carried out by the Office of Oversight) by April 1, 1998, and document such compliance in the ERAP by 9/30/98.

4.0 Completed Hanford Lessons Learned Taskings

4.1 As a result of the Hanford Explosion, the Ohio Field Office responded to seven action items related to Headquarters Secretarial Office taskings. Response to these tasking items was in addition to the action items mandated by the Secretarial memoranda and supported the originating office compliance with their own internal taskings. The taskings are listed below and represent a significant effort by the Project Offices and the Ohio Support Office.

TABLE 4.1

Date Submitted	Title	Originating Office
9/19/97	Training Course on Emergency Management Decision Making	NN-60
9/25/97	Status of Implementation of DOE Order 151.1, "Comprehensive Emergency Management System"	NN-60
9/30/97	Timely Notification of Emergencies and Significant Events	NN-60
10/24/97	Coordination of Summary Report on Field Activities	EH-2
11/13/97	Guidelines for the Daily Field Management Report	FM-10
11/24/97	DOE Accident Investigation Program Training Programs	EH-2

12/03/97	Lessons Learned - Hanford Tank Explosion Accident Investigation	EH-2
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5.0 Budget and Cost Data

5.1 With the exceptions listed in the table below, costs associated with the completion of the tasks in the Ohio Field Office Hanford Lessons Learned Project Plan are consistent with current site operational activities and emergency management programmatic activity.

Table 5-1

Site	Activity	Estimated Cost
Ashtabula	Jason Associates contract to complete an Emergency Management Assessment to address the issues of the August 4 and 27 Secretary Peña memoranda	\$8,600.00
Miamisburg	Baseline Validation process for BWO is ongoing. The DOE MEMP will validate the BWO Baseline during the period January to March 1998. BWO is expected to submit a Baseline Change Proposal in February 1998.	TBD